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PREVENTION OF BIRTH INJURY AND ITS RESULTING MORTALITY

FROM THE STANDPOINT OF THE OBSTETRICIAN

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EVANSTON ILL

As one reviews the subject of birth injury and studies one's own cases, one begins to wonder as a recent English author has said, whether it is not true that one of the greatest risks that the human being ever assumes is his passage through the birth canal.

Birth injury may occur in any type of delivery. It is very essential, therefore, that a careful explanation be given to parents, and the most valuable explanation of course, comes from the consultant who is not present at the birth. This consultant is most often the pediatrician.

The incidence of birth injury is very difficult to ascertain. Nor can any one say whether it is on the increase or the decrease, for one is able to find in the English literature only a few accounts of analyses of large numbers of cases and classifications of birth injuries.

At the Evanston Hospital, investigation of the last 5,000 deliveries reveals the fact that there were fifty-one major injuries including fatal cerebral hemorrhage. Besides these there were thirty-seven minor injuries including abrasions from forceps and other contusions of minor importance. At the same hospital an analysis of the fetal autopsies for the last ten years shows that 34 per cent of these fetal deaths including premature babies were due to cerebral hemorrhage. It also shows that 40.6 per cent of the autopsies on full-term babies dying at birth demonstrated cerebral hemorrhage.

W. H. Taylor has shown through compilation of various autopsy records that in approximately 30 per cent of all fetal autopsies cerebral hemorrhage is found to be the principal cause of death. These figures are presented in table 1.

Of the various injuries cerebral hemorrhage, no doubt, occupies the primary position as to both severity and mortality, and since it is probably the most common injury it will be discussed first.

CEREBRAL HEMORRHAGE

The old saying that the baby dies below the tentorium seems to have been demonstrated both by clinical and by laboratory evidence. None of the supratentorial part of the brain seems essential for life. As Crothers¹ has said, "the integrity of a small block of tissue lying between the third thoracic vertebra and the tentorium determines whether a baby is alive or dead when born."

The exact mechanism by which this particular injury is produced cannot always be explained. Injuries to the brain must be looked on as an interaction of a variety of factors.

Direct therapy or possible prevention of such injuries is confined to the control of pressure and indirectly to the preservation of the continuity of pressure in the various cranial vertebral cavities. It is interesting to note that new-born animals with thick skull bones and no fontanels do not have intracranial lesions. The precise manner in which the tentorium or other intracranial structures are torn does not seem to be important. About all that is known concerning the etiology of cerebral hemorrhage can be summed up in four statements: 1. Distortion of the head causes underlying sinuses to be partially compressed with resulting disturbances of intracranial blood circulation. 2. Compression of the head in one direction causes a compensatory elongation in other directions and this strain is most marked along the free edges of the tentorium. 3. Negative pressure causes a suction effect on the presenting part of the head in vertex presentation and on the uppermost part of the head in breech presentation. 4. The character or strength of the tissue put under stress is an important determining factor.

Bearing these points in mind, it is quite evident that nothing should be done to hasten delivery until the head is visible or on the pelvic floor. The use of solution of posterior pituitary and other drugs to cause more rapid descent of the head is contraindicated.

Episiotomy is indicated in order to relieve pressure as the head comes through the narrow vaginal opening, especially in cases in which the baby is premature.

Premature rupture of the membrane either for induction or to hasten labor seems contraindicated because of the negative pressure exerted on the presenting part.

There are cases encountered in which the heart tones gradually or suddenly become slower about the time the head reaches the midplane. In many cases this is, no doubt, due to intracranial pressure. Application of forceps will only have a tendency to increase the pressure.

Ether many times relieves uterine contractions, and the resulting relaxation will lessen cranial pressure and the fetal circulation may improve.

Outlet forceps in conjunction with episiotomy will probably result in fewer cerebral hemorrhages. If forceps are used, it is much less dangerous to make a cephalic application than a pelvic application and it is also quite essential that there be no squeezing with the blades. If necessary, a towel or set-screw should be used to prevent such squeezing when effort to extract the head is exerted.

After a long labor in which molding of the head has occurred to a marked degree, such a molded head should be released quite slowly.

¹ Crothers, Bronson. Obstetrical Injury of Spinal Cord. Boston M. & S. J. 196: 397 (March 10) 1927.

Another contributing cause is a violent attempt to resuscitate the baby, especially Schultze's swinging

Many obstetricians as a routine procedure give the baby an injection of 20 cc of whole blood in the thigh following all difficult deliveries. It is thought that this procedure lowers coagulation time and thereby helps to prevent what would become a dangerous hemorrhage from a point at which slow oozing is occurring. There is as yet, however, no definite proof that the procedure has lowered the fetal mortality but it has been practiced for some time and, I think, will continue to be by most obstetricians.

Another contributing cause, and one that is probably considered by most men is a too prolonged test of labor. Since cesarean section now carries a satisfactorily low risk, it behooves the obstetrician to use it oftener in cases in which the pelvis is known to be abnormally flat or small rather than to allow the baby to develop a cerebral hemorrhage in an attempt to see whether the uterine contractions can force the head through the inlet. The same can be said for the second stage of labor with the head deeply engaged. Delivery should be effected with episiotomy and forceps generally within two hours. Further delay only tends to raise the mor-

TABLE 1—Frequency of Cerebral Hemorrhage as Cause of Fetal Death

Europe	Autopsies	Cerebral Hemorrhage	
Pott	101	14	
Bauereisen	47	11	
Bentlin	73	8	
Meyer	64	12	
Moreno	40	10	
Vischer	186	74	
Warwick	36	18	
Schaefer	680	140	
Logi	173	62	
Cruckshank	800	161	
De Luga	770	474	
Kuhn	56	18	
Total	3,011	1,002	30%
America			
Bailey	100	40	50%
Rodda		63	
Paddock	146	29	
Tyson	119	21	
Voron	70	73	
Irling	182		
Total	617	276	28%

TABLE 2—Cerebral Hemorrhage at Evanston Hospital
Jan. 1, 1925, to Dec. 31, 1934

Total autopsies on new born	231
Term	123
Premature	108
Total cases of cerebral hemorrhage	93
Term	50
Premature	43
34.02% of autopsies on new born show cerebral injuries	
40.6% full term babies dying at birth show cerebral hemorrhage	

tality. The stubborn obstetrician is the cause of cerebral hemorrhage in a certain number of cases just as the hasty obstetrician is contributing to its prevalence.

In this study of 5,000 deliveries there were 222 cesarean sections. Two babies showed symptoms of cerebral irritation but recovered and were discharged apparently well. Both cases had had a test of labor. Two other babies were cut with the scalpel when the lower uterine segment was being opened. These were the only injuries among this group of 222.

BRACHIAL PALSY

Injury to the brachial plexus is generally due to stretching of the first and sixth cervical nerves and nerve roots. The injury in some cases is due to pressure between the clavicle and underlying bone structures and also to a primary injury of the shoulder joint or humerus. It is therefore quite necessary that the

TABLE 3—Injuries at Evanston Hospital in 5,000 Consecutive Deliveries

Major injuries	31
Minor injuries	31
Brain hemorrhage	70
Diagnosed by autopsy	21
Diagnosis made from symptoms	5
Lived 3 died 2	
Spontaneous	6
Forceps	13
Breech	9
Cesarean	2
Term	21
Premature	1
Fractured clavicle	14
Spontaneous delivery	1
Version or breech	7
Forceps	6
Brachial plexus (all temporary)	4
Spontaneous delivery	2
Forceps	3
Skull fracture after version and forceps	1
Fracture of humerus in breech delivery	2

TABLE 4—Minor Injuries at Evanston Hospital in 5,000 Consecutive Deliveries

Minor injuries	31
Facial paralysis	13
Forceps	10
Spontaneous	3
Forceps abrasions	19
Hemorrhage of sclera	3
Soft tissue hematoma	2
Cephalhematoma	28

obstetrician use as little force as possible on the head in vertex presentations and in such an event light anesthesia seems indicated, as the uterine contraction will be more likely to deliver the shoulder. That injury is being done by those delivering babies is quite evident from the fact that new cases are being reported.

Crothers made the statement only a few years ago that sixty new cases a year show up in one clinic at the Children's Hospital in Boston.

Dropping the end of the bed and Kristeller expression are both useful maneuvers in delivering the shoulders. Sharp angulation of the spine in breech contributes to this injury, and the pressure of the fingers on the neck and shoulders of the baby during breech extraction is one of the most common causes.

We have had only four cases of brachial plexus injury in the last 5,000 deliveries and they were all quite mild. The symptoms lasted only from a few hours to a few days. Three were delivered with forceps and one was spontaneous.

FRACTURED CLAVICLE

Muus found an incidence of 1.5 per cent for fracture of the clavicle in 1,700 living babies and it was most common among multiparas. Twenty-two cases that he reported were divided as follows: seventeen spontaneous and five breech.

Hukewytch in 1929 found thirty-two fractures of the clavicle in 2,213 deliveries. Both of these figures would seem rather high, as I was able to find only fourteen fractured clavicles in the last 5,000 consecu-

tive deliveries, which gives an incidence of 0.28 per cent. The relative number of fractured clavicles in breech seems much higher than in vertex presentations. Operative delivery seems to contribute practically all fractures of the clavicle. We had only one case in the spontaneous deliveries, whereas there were thirteen in babies delivered either with forceps or by breech extraction.

The operator should avoid traction on the head or neck. In vertex presentation the finger should reach for the axilla as soon as possible, and light rather than deep anesthesia seems indicated.

FACIAL PARALYSIS

Facial paralysis occurs most often in forceps delivery, owing to the pressure of the blades on the tissues surrounding the facial nerve. It may be central however, because either of cortical or of intramedullary hemorrhage. It has also occurred in spontaneous delivery especially when there was a flat or contracted pelvis. Unless central in origin, the paralysis disappears in from a few minutes to a few days.

The forceps blade should not be too thin, the cephalic curve should not be too sharp, and a sliding blade will sometimes permit a better application to an asynclitic head.

STERNOMASTOID MUSCLE INJURY

Wryneck noticed at birth is a true congenital anomaly in practically all cases. Trauma as the cause is very exceptional. The pathologic state of the sternomastoid muscle is probably due to an anomalous attitude of the head, and this faulty attitude may favor presentation by the breech. Comparatively slight traction suffices to lacerate this abnormal muscle, but the laceration may even improve its condition.

RUPTURE OF THE LIVER

Rupture of the liver is generally due to some abdominal manipulation while an attempt is being made to convert a faulty presentation into a more favorable one. It may occur also in version or breech extraction or in an attempt to assist a delivery by external pressure. The relatively large size of the liver in the newborn is probably a contributing factor. These babies are symptom free at birth and die suddenly about the third day when the capsule breaks as the result of the increasing pressure within the liver. A fairly large intra-abdominal hemorrhage is found at autopsy.

BREECH DELIVERY

Breech delivery and version with breech extraction show a higher incidence of birth injury than any other type of delivery. The fetal mortality is also correspondingly high. A recent report from the Brooklyn Gynecological Society shows that birth injury occurred in 2 per cent of "spontaneous breech assisted," 5 per cent of "breech extraction" and 9.9 per cent of "breech broken up." The report covered all breech deliveries in thirty-two Brooklyn hospitals from 1926 to 1930 inclusive but did not include breech delivery following podalic version. The fetal mortality among babies weighing over 2,500 Gm, after taking out twins, congenital defects, prematures and macerated fetuses was 12.6 per cent.

Several pertinent facts should be mentioned relative to breech extraction. The unnecessary haste displayed by the average operator seems most objectionable and the next most undesirable factor is the lack of complete relaxation and dilatation of the soft parts. Breech

extraction calls for complete dilatation and deep ether anesthesia. Episiotomy is called for in practically every case.

During breech extraction the operator should avoid pressure on the fundus, extreme angulation, excessive suprapubic pressure and dangerous traction. It is possible to elongate the spinal column about 5 cm, and the thoracic cord of the fetus is only about one-eighth inch (0.3 cm) in diameter. The cord is enlarged in the cervical and lumbar region and is well anchored by the brachial plexus above and the cauda equina below. It is for these reasons that extreme traction causes thoracic cord injury in some cases.

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THE TREATMENT OF ACUTE NICOTINE POISONING

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The fact that an individual poisoned with nicotine is rarely seen by the physician in time to institute treatment is not a sufficient reason for a lack of knowledge as to what may be done to save life when the opportunity is at hand. Except for the usual procedures to remove any unabsorbed poison and the administration of stimulants, we have been unable to find in the literature any description of a rational treatment for nicotine poisoning. Generally the condition is considered hopeless. This pessimistic attitude is apparently due to the belief that the drug causes generalized paralysis of the central nervous system based on the fact that complete muscular paralysis, loss of reflexes and paralysis of respiration (and finally of circulation) follow its absorption in sufficiently large doses. As Moore and Rowe¹ have pointed out, all these effects could as readily be due to the curare-like action of the drug as to central paralysis. As a result of experiments on dogs,² we are convinced that death from nicotine poisoning is due to peripheral paralysis of the respiratory muscles when convulsions are prevented, and if these occur to fixation of the respiratory muscles.

We were unable to elicit any clear evidence of paralysis of either the respiratory or the vasomotor center during the convulsive seizures.

At the 1935 meeting of the American Society of Pharmacology and Experimental Therapeutics, Gold and Brown³ of Cornell University presented strong evidence that nicotine poisoning in the experimental animal causes a peripheral rather than a central paralysis of respiration.

Unpublished experiments carried out under the direction of one of us (F. E. F.) show that the paralysis of reflexes is peripheral rather than central, indeed, that the reflex excitability of the spinal cord is retained even in the presence of nicotine in many times the fatal dose.

Furthermore, experiments herein reported show that nicotine does no evident irreparable damage to any of the structures on which it acts and that the administra-

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¹ Moore and Rowe, *J. Physiol.* **22**, 273, 1897.

² Thomas, J. E. and Franke, F. E., *J. Pharmacol. & Exper. Therap.* **34**, 111 (Oct.) 1928; Franke, F. E. and Thomas, J. E., *ibid.* **48**, 199 (June) 1933.

³ Gold, Harry, and Brown, Frederick, *J. Pharmacol. & Exper. Therap.* **54**, 143 (June) 1935.

tion of very large doses is not incompatible with reasonably prompt and apparently complete recovery when appropriate treatment is instituted in time. For these reasons, nicotine poisoning should, we think, be regarded as a temporary respiratory emergency comparable to drowning (or electrical shock) and should be treated as such. We have undertaken to determine the results that follow the application of the methods of treatment in common use in acute emergencies of the type mentioned following the administration of nicotine to dogs in doses that ordinarily prove fatal.

CLINICAL LITERATURE

On reviewing the literature we find seventy deaths⁴ from nicotine in rather concentrated solutions and from tobacco. We are supplementing this list with four fatal cases occurring in St. Louis which have not been previously reported. The deaths from nicotine usually occurred within a few minutes after its ingestion. In only one of twenty-eight fatal cases was treatment attempted. An endeavor to administer an emetic was unsuccessful because the patient's jaws were clenched.

Death did not occur so quickly in the forty-six fatal cases of tobacco poisoning. Alcohol was used in five cases, gastric lavage in three, artificial respiration in two, ammonium carbonate in two and the remaining procedures were tried once each, friction, saline hypodermoclysis, atropine, aqua ammoniac and stichchine.

Artificial respiration was used in two cases, along with stimulants, whisky and elimination. In the Weak's case, artificial respiration was begun after the heart and respiration had apparently stopped and the patient

revived. The artificial respiration was continued for at least five of the next seven hours. Thirty minutes after the artificial respiration had been discontinued the patient suddenly died. In the Reynolds⁶ case artificial respiration was resorted to on several occasions when the respiration became very slow. Several hours later, when the patient's condition seemed quite favorable, respiration suddenly ceased and on immediate investigation the heart was found to have stopped beating.

The value of artificial respiration is strikingly illustrated in the following case. Dr. Bleasdale⁷ was called in to see a boy, aged 2 years, whom he found in a dying condition. The boy, a strong sturdy little fellow, had been given a tobacco decoction rectally for the cure of worms. The physician found the child comatose and pulseless, and the breathing had almost ceased. The boy's pupils were widely dilated and insensitive. Artificial respiration was administered at once and kept up for about one hour during which time others present administered soap and water enemas and afterward, biliary by rectum. For the first twenty minutes there was little effect and whenever artificial respiration was stopped the patient did not breathe. Gradually there was a change for the better and at the end of about forty minutes the child vomited. After this the improvement continued and the artificial respiration was discontinued at the end of an hour. Three hours later the child had completely recovered from the effects of the poison except that he complained of feeling tired.

Removal of the poison is, of course, indicated. McNally⁸ reports a case of recovery following the ingestion of a concentrated nicotine solution. He attributes the recovery to the profuse vomiting and gastric lavage, which was carried out. Emetics may be effective in removing pieces of tobacco that will not pass through the stomach tube.

Esser and Kuhn⁹ describe a case of recovery following the ingestion of 4 Gm. of pure nicotine. They attribute recovery to the fact that the patient had taken food previously and to the copious and persistent vomiting that occurred.

Coffee, ammonia and artificial heat have been used in a number of cases in which recovery occurred. At a time when tobacco was used therapeutically, whisky was often used as a stimulant.

While the fatal dose of nicotine is very small, Sollmann¹⁰ giving one drop (65 mg.) as the minimal fatal dose yet individuals have ingested much larger quantities and have recovered. Vomiting generally occurred or gastric lavage was carried out.

Through the courtesy of the health commissioner of St. Louis Dr. Bredeck we inspected the records of the coroner's office for a period of ten years ended in 1933 and found four deaths from nicotine poisoning. A brief account of these cases follows.

T. H. July 24, 1926 committed suicide by drinking a nicotine insecticide. He was seen taking the insecticide fell to the floor and asked for a doctor. He died in an ambulance on the way to the hospital.

J. C. Dec. 28, 1928 was found dead in bed. On the floor nearby was a 2 ounce (30 cc.) bottle which contained nicotine. He had threatened suicide.

6 Reynolds H. S. A Case of Acute Nicotine Poisoning of Peculiar Origin. *J. A. M. A.* 62: 1723 (May 30) 1914.

7 Bleasdale R. *Brit. M. J.* 1: 1155 1906.

8 McNally W. D. Nicotine Poisoning with Recovery. *J. A. M. A.* 77: 377 (July 30) 1921.

9 Esser A. and Kuhn A. *Deutsche Ztschr. f. d. ges. gerichtl. Med.* 21: 305 1933.

10 Sollmann Torald. A Manual of Pharmacology, ed. 3 Philadelphia: W. B. Saunders Company, 1926, p. 411.

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⁵ Weak's. W. A. *Boston M. & S. J.* 47: 461 1853.

F W H, a man, aged 54, a truck driver, went to the basement of his home June 8, and ten minutes later returned upstairs holding his abdomen and shortly after fell to the floor. Attempts to get him to swallow milk were unsuccessful, for he had lost consciousness. The patient was apparently dead by the time a physician arrived. A half pint whisky bottle partly filled with nicotine was found on a table in the basement. The coroner reported the death as due to nicotine solution, whether it was taken accidentally or intentionally was not ascertained.

J W, a boy, aged 3 years, was playing in the kitchen and when the woman watching him had turned her back he took a bottle containing "nikoteen" insecticide and drank part of its contents. She took him to a hospital less than a block away where he died a few minutes later. An autopsy was performed but the stomach contents were not analyzed.

Essei and Kühn⁹ point out the increasing incidence of nicotine poisoning in recent years. McNally found five cases of fatal nicotine poisoning in Cook County, Ill., in a period of two years, and we are reporting four cases in a period of ten years in the city of St. Louis. If one assumes that such a ratio of nicotine deaths to population holds true for the United States as a whole there are more than 500 deaths in a ten year period instead of the much smaller number that we have found in the literature.

METHODS

In all but one of the experiments herein reported the nicotine was either dropped into the mouth in the form of the undilute alkaloid or injected into the circulating blood in 10 per cent solution. It was given intramuscularly as the hydrochloride in one instance. The injections were made either into a vein or into the cavity of the left ventricle. Both anesthetized and unanesthetized dogs were used.

The results of the following methods of treatment were observed: artificial respiration alone, artificial respiration with intracardiac injection of epinephrine and indirect massage of the heart, and artificial respiration and direct massage of the exposed heart, with or without intracardiac injection of epinephrine. The epinephrine was given in doses of from 0.2 to 1 cc of the 1:1,000 solution, according to the size of the dog.

The artificial respiration consisted of positive ventilation of the lungs by means of an interrupted current of compressed air. The air was supplied to anesthetized animals through a close fitting tracheal tube and to unanesthetized animals through a face mask made air tight by means of petrolatum cotton packing. When artificial respiration alone was relied on it was started before the circulation and respiration had failed. The other measures were used to resuscitate animals that were apparently dead.

RESULTS

A. Artificial Respiration Alone—Artificial respiration without other treatment was tried in sixteen experiments on unanesthetized animals (table 1). In fourteen of these it was begun shortly after or (in one animal only) just before the nicotine was administered and while the pulse was still palpable, or when the blood pressure was being observed before it had fallen below the normal level. In all these fourteen experiments the animals lived as long as the artificial respiration was continued. Ten of them recovered completely and survived till used for other purposes. In two the artificial respiration was stopped before recovery and two were killed later with a second dose of nicotine. Seven of these animals were given nicotine in doses that had proved uniformly fatal in other animals,¹¹ and six of

these were in the group that survived indefinitely. According to our results with similar doses in other experiments, three fourths of the other animals would have died if artificial respiration had not been given.

Artificial respiration was started in two experiments after the circulation had failed, that is, after the pulse was no longer palpable in one instance and while the blood pressure was falling rapidly and had reached 60 mm in the other. No improvement was noted in these animals, and the heart ultimately stopped in spite of the artificial respiration.

There were no signs of circulatory failure in the group of fourteen animals as long as the artificial respiration was continued. The pulse was of good volume and the blood pressure, when observed, was generally above the normal level during the first half hour but slowly returned to the normal level. If the artificial respiration was stopped the blood pressure rose slightly at first and then fell rapidly, as in ordinary asphyxia. However, we got the impression that the circulation failed rather more promptly in nicotineized animals after the respiration had been stopped than it does in simple asphyxia. We have no data on the length of time that normal animals survive asphyxia and are therefore unable to make a direct comparison. Generally one minute of asphyxia was sufficient to cause an alarming fall in the blood pressure of the nicotineized animals, especially if allowed to develop soon after the nicotine was given. Later the animals were able to survive two minutes or more without artificial respiration, but this was probably because, having partially recovered from the effects of the nicotine, they made some spontaneous respiratory efforts.

B. Artificial Respiration, Intracardiac Epinephrine and Indirect Cardiac Massage—This treatment was employed as a means of resuscitating animals that were apparently dead following the intravenous or intracardiac administration of a fatal dose of nicotine. Sixteen animals were treated in this manner (table 2). Twelve of these were in the surgical stage of ether anesthesia when the nicotine was given and four were unanesthetized. The treatment was begun in these animals only after respiratory movements had ceased and the heart beat could no longer be detected by palpation either of the pulse in the femoral artery or of the heart through the chest wall. In our rather large experience no animal has recovered without treatment after this stage has been reached, and we are convinced that spontaneous recovery does not occur after the heart action and respiratory movement can no longer be detected by external observation. The size of the dose is therefore of less importance in these experiments than in those described in the previous section for the reason that the dose, though in some cases less than the certainly fatal dose, proved to be a fatal dose for the particular animal to which it was given.

Most of the animals were prepared for artificial respiration before the nicotine was given, so that this part of the treatment was generally started promptly as soon as we had satisfied ourselves that the circulation and respiration had positively failed. The administration of epinephrine and the beginning of cardiac massage were occasionally postponed for a few minutes to test the efficiency of artificial respiration alone. As stated previously, artificial respiration alone was uniformly ineffective after circulatory failure. The time from the giving of nicotine till the beginning of each of the aforementioned procedures is given in the table.

¹¹ Franke, F. E. and Thomas, J. E. Proc. Soc. Exper. Biol. & Med. 29: 1177 (June) 1932.

One half of the animals were successfully resuscitated and, with one exception, restored to normal. This one animal was apparently recovering but died following interruption of the artificial respiration.

Some of the deaths were associated with delay in administering a part of the treatment, and it is probable that a somewhat higher percentage of recoveries would

Artificial respiration does not prevent the peripheral muscular paralysis that ordinarily follows fatal doses of nicotine and it has to be continued until this passes away. The duration of the paralysis varied a great deal (from ten minutes to three hours and twenty minutes) and was not always proportional to the dose of nicotine. For example, one animal that had been given 10 mg

TABLE 1—Results with Artificial Respiration as the Only Therapeutic Measure

Dog	Dose of Nicotine, Mg per Kg	Mode of Administration	Time from Giving Nicotine till Artificial Respiration Was Started, Minutes	Condition of Circulation	Duration of Artificial Respiration		Final Results
					Hours	Minutes	
20 24	9.6	Tongue				11	Recovery
20 24	9.6	Tongue	3	Good pulse		14	Lived during artificial respiration allowed to die revived later with epinephrine
(2d dose)							
14 24	9.2	Tongue	6.7	Good pulse	1	15	Recovery
50 24	8.0	Heart	0.5	(Convulsions)	2	2	Lived during artificial respiration only
20 24	8.0	Heart	0.3	(Convulsions)	1	32	Recovery
11 27	10.0	Vein	1	Good pulse	2	36	Recovery
13-27	10.0	Vein	1	(Convulsions)		10	Recovery
12 27	10.0	Vein	1		2	4	Recovery
14 27	10.0	Vein	1	(Convulsions)	2	37	Recovery
7 27	5.0	Vein	2	No pulse		5	Death
8 27	9.0	Vein	1.1	Good pulse	2		Recovery
20 27	5.0	Vein	1	Blood pressure 180 mm but falling	1	15	Lived during artificial respiration killed with second dose
18 27	5.0	Vein	2.1	Blood pressure 150 mm but falling		10	Recovery killed same day with second dose
19 27	5.0	Vein	1.5	Blood pressure 60 mm and falling rapidly			Death
0 23	7.8	Muscle (HCL)	4.0			13	Recovery
0 23	15.6	Muscle (HCL)	Less than 3.0		3	20	Recovery

TABLE 2—Results with Artificial Respiration Intracardiac Epinephrine and Indirect Massage of the Heart Through the Chest Wall Following Failure of Circulation and Respiration

Dog (Etherized)	Dose of Nicotine, Mg per Kg	Time from Giving Nicotine Till Treatment Started, Minutes			Dose of Epinephrine (Total) Cc 1:1000	Duration of Artificial Respiration		Results
		Artificial Respiration	Epinephrine	Cardiac Massage		Hours	Minutes	
13 20	7.5	3.5	6.5	8.0	0.2			Death direct cardiac massage also failed
14 25	5.0	5.6	7.3	6.3	0.3		54	Complete recovery
15-25	5.6	14.0	15.5	14.6	0.4 (repeated)			Death
16 25	5.0	10.0	10.0	11.0	0.4 (repeated)			Death
17 25	4.0	18.5	18.5	18.5	0.3 (repeated)			Death
18 20	4.0	7.5	8.5	8.5	0.4 (repeated)			Death
20 20	4.0	6.5	8.3	6.5	0.3		42	Complete recovery
21 25	4.0	7.0	7.6	7.6	0.4	1	10	Complete recovery
22 25	3.5	6.5	7.7	7.7	0			Temporary recovery of heart then death
26 20	4.0	8.5	9.6	9.6	0.5	1	2	Complete recovery
27 20	4.0	14.5	15.5	15.5	0.6			Death
29 20	3.0	3.0	5.0	None	0.3		59	Complete recovery
(Unetherized)								
22 27	3.0	1.75 (manual)	1.75	15.75	0.5 (vein)			Death
		12.75 (mechanical)		20.0	0.75 (heart)			
23 27	3.0	3.0	2.25	2.25	0.5		7	Complete recovery
24 27	3.0	3.5	3.25	4.0	0.5 (repeated)	1	1	Complete recovery
26 27	2.0	3.3	3.3	3.3	0.5			Temporary recovery death followed after 1.75 minutes without artificial respiration

have been obtained if the treatment had been started promptly in all the animals. However, a few animals died which were given the full treatment as soon as possible after the failure of the circulation and respiration had been established.

Most of the failures were in animals in which the symptoms developed slowly and a comparatively long period of partial asphyxia preceded the beginning of treatment.

per kilogram intravenously recovered completely after ten minutes of artificial respiration, while another animal treated in the same way, after 5 mg per kilogram took one hour and fifteen minutes to recover. Because of the extreme variability in the duration of the paralysis it is not possible to determine accurately whether it was influenced by the different procedures, but it appears to be about the same in this group as in the preceding.

A constant tendency toward a fall in body temperature was noted during the period of paralysis. A rectal temperature of 31.5 C (88.7 F) was observed in one animal that did not recover. Although we applied heat in only a few experiments, its use is evidently indicated in prolonged muscular paralysis.

Two deaths were reported among the seventeen animals that recovered from the acute effects of the poison and were allowed to live. One of these was a pregnant bitch that died seventeen days after the experiment. The cause of death was not determined. The other animal had a respiratory infection that was evident on

In nine of a group of sixteen animals the heart beat was restored by means of artificial respiration and direct cardiac massage without epinephrine. In six animals the procedure failed to restore the circulation and epinephrine was tried later. In one the heart began to fibrillate before epinephrine could be used. This one experiment and the nine successful experiments of this group are listed in table 3. The six that were finally given epinephrine are listed in table 4 with the other experiments in which epinephrine was used.

Artificial respiration, direct cardiac massage and intracardiac epinephrine were tried in ten animals,

TABLE 3—Results with Artificial Respiration and Direct Cardiac Massage Without Epinephrine

Dog	Dose of Nicotine Mg per Kg	Mode of Administration	Artificial Respiration Started Minutes After Administration of Nicotine	Condition of Circulation	Duration of Artificial Respiration		Results and Comment
					Hours	Minutes	
6 24	6.0	Heart	2	Heart stopped	0	14	Lived during artificial respiration
31 24	1.3	Tongue	6.6	Heart stopped	0	9.0	Lived during artificial respiration
42 24	12.0	Tongue	6.6	Heart weak blood pressure 0	0	9.3	Lived during artificial respiration
48a 24	6.0	Heart	7.0	Heart stopped	0	3.0	Lived during artificial respiration
3c 24	10.0	Vein	2.3	Heart stopped	0	3.0	Lived during artificial respiration heart stopped after artificial respiration stopped restored later with epinephrine
42 24	10.0	Vein	3.0	Heart stopped	0	9.0	Heart fibrillated in 4 minutes
44 24	10.2	Tongue	6.0	Heart feeble	0	9.0	Lived during artificial respiration
29 24	10.0	Tongue	4.0	Heart feeble	0	1.0	Lived during artificial respiration (morphine ether anesthesia)
28 24	10.2 (twice)	Tongue	8.0	Heart stopped	0	20.0	Lived during artificial respiration (morphine ether anesthesia both spl cut)
36a 24	10.0	Vein	2.0	Heart stopped	0	9.0	Lived during artificial respiration (ethyl carbamate anesthesia)

TABLE 4—Results with Artificial Respiration Direct Cardiac Massage and Epinephrine

Dog	Dose of Nicotine Mg per Kg on Tongue	Time from Giving Nicotine Till Treated Minutes			Condition of Circulation	Duration of Artificial Respiration		Results and Comment
		Artificial Respiration	Cardiac Massage	Epi-nephrine		Hours	Minutes	
12 24	10.0	3	8.0	3.3	No pulse	1	31.0	Lived during artificial respiration artificial respiration and epinephrine alone failed
9 24	10.0	2	13.0	2	Heart stopped	0	32.0	Lived during artificial respiration second effort to resuscitate failed
15 24	9.2	3.0	14.0	10.0	Tongue pale, no pulse	0	33.0	Heart fibrillated after epinephrine was given
27 24	3.0 (1) 10.0 (2)	3.0 (after 2d dose)	9.0 18.0	9.0	Pulse and apex beat absent	0	33.0	Lived during artificial respiration
22 24	10.0	3.0	18.0	12.6	No pulse			Complete failure cardiac massage delayed
23 24	10.0	3.0	8.0	7.0	Heart stopped			Heart fibrillated dog was atropinized
4c 24	20.0	1.0	5.0	27.0	Heart beating feebly			Lived during artificial respiration
3c 24	9.3	3.0	6.0	10.0	Heart stopped			Heart fibrillated after epinephrine was given
2c 24	10.3 (1) 14.7 (2)	7.1	9.0	12.0	Heart stopped	2	1.0	Lived during artificial respiration
24 24	9.4	2.5	7.0	6.0	Heart stopped			Temporary recovery died before artificial respiration was stopped

the day of the experiment and became very much worse the following day. The other animals were apparently normal on the day following the experiment and continued so indefinitely.

C Artificial Respiration and Direct Cardiac Massage, With or Without Epinephrine—Although direct cardiac massage is rarely a practicable procedure outside the laboratory, these experiments are thought to be worth reporting for the light they throw on the ability of the circulatory mechanism to recover following failure induced by nicotine.

In all these animals the thorax was opened excluding the possibility of dispensing with the artificial respiration, so that only the circulatory phenomena are of interest. All the animals were killed at the end of the period of observation.

including the six in which a previous attempt at resuscitation without epinephrine had failed. In five of these the heart beat was restored and continued till the end of the experiment.

In the other five the heart either fibrillated or failed entirely to respond to the treatment. In three of these a prolonged attempt to restore the heart's action without epinephrine had failed and epinephrine was used as a last resort. In the other two the treatment was applied as promptly as in many that recovered, and these must be regarded as instances in which the method of resuscitation failed even when administered satisfactorily. Further details of these experiments are given in table 4.

All together direct cardiac massage was used, with other treatment in twenty animals after the circulation

had failed following the administration of nicotine. Resuscitation failed in a total of six of the twenty trials but in only three that cannot be accounted for by unusually unfavorable conditions. This is probably as good a record as could be obtained in a similar number of cases of simple asphyxia.

COMMENT

The use of artificial respiration to keep animals alive after the administration of what would otherwise be a fatal dose of nicotine is a common laboratory procedure. It was used by Langley and Dickinson¹² on the rabbit, cat and dog. It would seem that this fact should have suggested this measure as a means of treatment of acute poisoning in the human being. However, artificial respiration is seldom mentioned in this connection. We know of but three cases in which it has been tried. In one instance the patient recovered and in the other two life was evidently prolonged.

Hatcher¹³ noted that artificial heat caused a marked improvement in the condition of rabbits that had been injected with nicotine hypodermically.

Gautrelet and Halpern¹⁴ report an antagonism between nicotine and iodomethylate of methenamine. Their observations were made on experimental animals.

Our results indicate that artificial respiration started before the circulation has failed and continued until the muscular paralysis passes off should prove uniformly successful. They indicate also that there may be considerable hope of restoring the circulation soon after it has failed by injection of epinephrine into the left ventricle and indirect massage of the heart through the chest wall. Direct cardiac massage is not often a practical procedure in man, but the fact that it proves successful in a considerable percentage of cases in animals indicates that the nervous elements necessary for the maintenance of the circulation are not necessarily paralyzed by the action of nicotine.

Nicotine poisoning is relatively rare, but it is a potential menace in tobacco factories, especially those which manufacture nicotine products. All such places should be provided with means for the prolonged administration of artificial respiration and employ some one trained in its use. Artificial respiration should also be mentioned in the directions for the treatment of poisoning given on the labels of containers for nicotine.

SUMMARY

Various means of treatment and resuscitation were tried in fifty-two dogs acutely poisoned with nicotine.

Artificial respiration was uniformly successful if it was started before the circulation had failed and was continued till the muscular paralysis had disappeared.

Artificial respiration, intracardiac injection of epinephrine and indirect cardiac massage were used with fair success to resuscitate animals in which the circulation and respiration had failed.

The circulatory failure that follows fatal doses of nicotine in dogs is not necessarily permanent but is recovered from promptly if the heart can be started and artificial respiration maintained.

Prolonged artificial respiration and when the heart has stopped, intracardiac injection of epinephrine are recommended for trial in cases of acute nicotine poisoning.

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HYPERSENSITIVENESS TO PITUITARY EXTRACTS

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Hypersensitiveness to pituitary extract is apparently an uncommon condition. Hasson¹ in 1930 reported a case of general reaction following the injection of pituitary extract, and Wang and Maxwell² in 1933 reported a similar case of shock which occurred post partum and which they proved, by reinjecting a smaller quantity of the drug, to be due to solution of posterior pituitary. In neither of these cases is there a record of skin tests or of other allergic studies. One of us recently described a case which is presented here with four others that came to our attention later. Personal inquiry⁴ has revealed six other cases of general reaction in which posterior pituitary extract was suspected as the etiologic factor.

In a period of less than two years five cases of hypersensitiveness to pituitary extract have been observed in the Louisville City Hospital, three of the cases occurring within three months.

CASE 1—Mrs. H. F., an American housewife, aged 28, in good general health, the mother of seven children, had no personal or family history of allergic diseases. Following the birth of two of her first five children she was given a subcutaneous injection by her private physician (presumably pituitary extract). In November 1933 she was given the usual injections of pituitary extract and ergot following the birth of her sixth child. There were no untoward reactions from any of these injections. Her seventh baby was born Nov. 8, 1934, and again the usual subcutaneous injections of pituitary and ergot were given. About thirty minutes later massive swelling of the lips and face was noted and the patient complained that her tongue felt as if it were greatly swollen. She began to have respiratory difficulty which increased steadily until it was relieved by epinephrine. She recovered completely and had an uneventful puerperium until the sixth day post partum at which time a generalized urticarial rash occurred with considerable itching and discomfort. This lasted five days, gradually subsiding and leaving the patient feeling well. Apparently the patient was sensitized by one of her previous injections, namely that of November 1933.

CASE 2—C. R., aged 26, the mother of five children, without a personal or family history of allergy received pituitary extract post partum on Oct. 7, 1929, Sept. 8, 1932, and Feb. 4, 1934. There were no unusual symptoms from any of these injections. On Dec. 5, 1934, she was given double strength pituitary extract twelve doses 0.5 cc. each, following a dilation and curettage for hyperplastic endometritis. There were no immediate reactions, but six days later she began to have swelling of the face and hands and a generalized urticaria developed which lasted five days. She was apparently sensitized by the injections given on Dec. 5, 1934.

CASE 3—M. J., aged 35, without personal or family history of allergy has two children aged 2 and 10 years, respectively. She received pituitary extract after both deliveries and no unusual reactions were noted. On Feb. 3, 1935, she was given 1 cc. of double strength pituitary extract for relief of abdominal distention. Three hours later she noticed a firm swelling at the site of injection in the thigh. The following day this swelling had increased considerably and was described as being the size of a dinner plate. No urticaria or other general symptoms were noted. This patient was apparently sensitized by

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¹ Hasson, James. Anaphylaxis Following Injection of Pituitary Extract. *Brit. M. J.* 1: 242 (Feb. 8) 1930.

² Wang, P. W., and Maxwell, J. P. Protein Shock After the Administration of Pituitary Chinese M. J. 47: 66 (Jan.) 1933.

³ Simon, F. A. Hypersensitiveness to Pituitary Extract. *J. A. M. A.* 104: 996 (March 23) 1935.

⁴ From Drs. David S. Hillis, J. I. Hofbauer, Walter McMann and William E. Studdiford.

¹² Langley and Dickinson. *J. Physiol.* 11: 263, 1890.

¹³ Hatcher, R. A. *J. Physiol.* 11: 17, 1904.

¹⁴ Gautrelet, J., and Halpern, N. *Arch. internat. de pharmacodyn. et de therap.* 47: 5 (Jan. 30) 1934.

a previous injection, but as will be seen later (table 2) the degree of sensitization in this case is less than in cases 1 and 2.

CASE 4—G W, aged 32, has a history of nine pregnancies and of a subcutaneous injection (presumably pituitary extract) after each delivery. Her mother has severe asthma and the patient is clinically sensitive to egg. She vomits and has smothering spells whenever she eats even a small quantity of egg. She often has attacks of urticaria. April 12, 1933, she was given pituitary extract following the birth of her tenth child. Within thirty minutes there was a marked swelling of the tongue and throat, a rash over the entire body, and considerable respiratory difficulty. Epinephrine was administered and four hours later she felt quite comfortable but still had some swelling of the tongue and throat.

CASE 5—M C, aged 36, has had ten children and four miscarriages. She has had an itching eruption for the past twelve to fifteen years, which is made worse by eating tomatoes. During the birth of four or five of her children she was given, by her private physician, injections to hasten the delivery (pre-

neous material added in the manufacturing process. All tests were done in duplicate and all substances giving positive reactions were applied in the same way to a normal person with negative results.

It is apparent from table 4 that these patients are sensitized to some constituent of the pituitary gland and not to a preservative or other foreign material. It is apparent also that the specificity is not directed toward some species specific factor distributed throughout the various tissues of some particular species of animal or toward the brain tissue of one or more animal species. It is directed, at least in part, toward some constituent of the pituitary gland of several animal species, including man himself. The question arises: Is this constituent a recognized hormone or some other substance present in the gland? The hormones of the pituitary gland, so far as their pharmacologic

TABLE 1—Summary of Cases

Case	Age	History of Allergy		Pregnancies	Previous Pituitary Injections	Date of Last Injection	Type of Reaction	Scratch Test Commercial Pituitary Extract	
		Family	Personal					Mother	Child
1	28			7	2*	11/18/31	Angioneurotic edema dyspnea in 30 minutes urticaria 6 days later	+	—
2	26			5	3	12/1/34	Angioneurotic edema urticaria 6 days later	+	—
3	55			2	2	2/17/30	Local swelling at injection site in 3 hours	+	—
4	32	Mother has asthma	Urticaria, sensitive to egg	10	9	4/17/30	Angioneurotic edema urticaria dyspnea 30 minutes later	+	—
5	36		Eczema sensitive to tomato	10+4	4 or 5*	3/18/33	Angioneurotic edema dyspnea nausea and vomiting, few minutes to 1½ hours	—	—

* Presumably

sumably pituitary extract). No abnormal reactions were noted after any of these injections. Her ninth baby was born in the hospital on March 18, 1933. Pituitary extract and ergot were given after delivery and shortly after the injections (a few minutes according to the patient's history, an hour and a half according to the hospital records) she became nauseated, vomited, 'got red all over,' and had swelling of the tongue, face and hands and considerable difficulty in breathing. Epinephrine was given and an hour later she was much improved. The remainder of the puerperium was uneventful. Her tenth child was born April 9, 1935, but no pituitary was given.

These cases are summarized in table 1.

Skin tests were made on these five patients with various preparations. The results are shown in table 2, from which it may be seen that sensitization is not limited to one particular brand of extract, for positive tests were obtained with five different brands comprising extracts of both the anterior and the posterior lobes. Pitocin, containing the oxytocic factor, gave negative tests, while pitressin, containing the vasoconstrictor and antidiuretic principles, gave positive tests. The controls, ergot and physiologic solution of sodium chloride, were negative. All these extracts gave negative tests on a normal control subject.

The results of a titration of the skin sensitivity by skin tests with serial dilutions in the five cases is shown in table 3. Evidently these patients have a high degree of skin sensitivity comparable to that seen in hay fever. The first two patients are more highly sensitive than the remaining three.

The skin tests recorded in table 4 were made in an effort to identify the constituent in the extract to which these patients are sensitized. Emulsions of fresh material were used in these tests in order to exclude the influence of preservatives and other possible extra-

action is concerned, are known to be organ specific rather than species specific. The possibility exists, however, that some other constituent of the gland is likewise organ specific. The hormone of the posterior pituitary has not been synthesized or even isolated in crystalline form, but relatively pure preparations have been made, and the vasopressor and oxytocic factors have been separated by Kamm and his associates.⁵

TABLE 2—Skin Tests with Various Pituitary Preparations—Scratch Method

	Case				
	1	2	3	4	5
Pituitary Extract (Obstetrical) Merrell	+	+	+	+	+
Pituitrin (Obst.) P. D. & Co.	+	+	+	+	+
Posterior Pituitary B. W. & Co.	+	+	+	+	+
Pituitary whole Armour	+	+	+	+	+
Anterior pituitary B. W. & Co.	—	—	—	—	—
Antuitrin P. D. & Co.	+	+	+	+	+
Anterior Pituitary Extract Lilly	+	+	+	+	+
Antuitrin G. P. D. & Co.	+	+	+	+	+
Antuitrin S. P. D. & Co.	—	—	—	—	—
Pitocin P. D. & Co.	—	—	—	—	—
Pitressin P. D. & Co.	+	+	+	+	+
Ergot, aseptic P. D. & Co.	—	—	—	—	—
Physiologic solution of sodium chloride	—	—	—	—	—

Through the courtesy of Dr. Kamm we obtained special purified preparations of pitressin containing 10 pressor units, 0.4 oxytocic unit and 0.23 mg total solids per cubic centimeter, and of pitocin containing 10 oxytocic units, 0.2 pressor unit and 0.034 mg total solids per cubic centimeter. Skin tests were made with serial dilutions of these preparations and also with commercial pituitary extract (obstetric), which contains 10 units of both pressor and oxytocic principles and from 5 to

⁵ Kamm, Oliver, Aldrick, T. B., Grote, I. W., Rowe, L. W., and Bugbee, E. P., The Active Principles of the Posterior Lobe of the Pituitary Gland, *J. Am. Chem. Soc.* 50: 573, 1928.

10 mg total solids per cubic centimeter. All five patients reacted in a similar manner to these tests. Table 5 shows a typical result in one case and also the result in a nonsensitive control subject.

From table 5 it may be seen that in the three preparations of posterior pituitary the capacity to give skin reactions in a sensitized patient is not proportional to the degree of pharmacologic activity but is more nearly proportional to the total solids. It is possible to separate, to a great extent, pharmacologic activity from capacity to give skin tests. Hence the sensitivity is not due to the vasopressor or oxytocic factors but to some other constituent of the gland.

The hormones of the anterior pituitary have neither been synthesized nor prepared and standardized in sufficiently pure form to be of much value in differential skin testing. From table 2 it may be seen that positive skin tests were obtained with three different preparations of the anterior lobe and negative skin tests with one preparation. Negative tests were also obtained with the anterior pituitary-like hormone obtained from pregnancy urine (Antuitrin-S).

Skin tests were made by the scratch method on the youngest babies of patients 1, 4 and 5 thirteen days twenty-three months and six days respectively, after

TABLE 3—Intradermal Tests (0.02 cc) with Commercial Pituitary Extract, Obstetric

Dilution	Case 1	Case 2	Case 3	Case 4	Case 5
1:1000	+++	+++	+++	+++	+++
1:10,000	+++	+++	+	++	+++
1:100,000	+	++	—	+	+
1:1,000,000	+	+	—	—	—
1:10,000,000	—	—	—	—	—
Diluting fluid	—	—	—	—	—

TABLE 4—Skin Tests with Various Tissue Extracts Scratch Method

	Case 1	Case 2	Case 3	Case 4	Case 5
Cattle					
Pituitary	+	+	+	+	+
Pons	—	—	—	—	—
Cerebral cortex	—	—	—	—	—
Skeletal muscle	—	—	—	—	—
Blood serum	—	—	—	—	—
Hog					
Pituitary	+	+	+	+	+
Pons	—	—	—	—	—
Cerebral cortex	—	—	—	—	—
Skeletal muscle	—	—	—	—	—
Blood serum	—	—	—	—	—
Dog					
Pituitary	+	+	+	+	+
Pons	—	—	—	—	—
Cerebral cortex	—	—	—	—	—
Skeletal muscle	—	—	—	—	—
Blood serum	—	—	—	—	—
Human					
Pituitary	+	+	+	—	—
Pons	—	—	—	—	—
Cerebral cortex	—	—	—	—	—
Skeletal muscle	—	—	—	—	—
Lung	—	—	—	—	—
Thyroid	—	—	—	—	—
Pancreas	—	—	—	—	—
Adrenal	—	—	—	—	—
Kidney	—	—	—	—	—
Liver	—	—	—	—	—
Spleen	—	—	—	—	—

* Intradermal test positive

birth. These tests were entirely negative to the same pituitary extracts used in testing the mothers. The ninth child of patient 5 also gave a negative test twenty-five months after birth.

Local passive transfer (Prausnitz-Kustner) was strongly positive with the serum of patient 1 (H F) on Nov 21, 1934, thirteen days after the last injection of pituitary extract. Two recipients were used and the reaction was easily elicited both by the scratch method and by the intradermal method. The controls were

negative. Commercial pituitary extract, 1:10 dilution was used as the test substance. March 20, 1935, four months later, local passive transfer was attempted again on three recipients. Both commercial and human pituitary extracts were used as test substances. The tests were negative to both extracts in all three cases. The same test substances, however, gave strongly positive skin tests on the patient herself at the time the blood

TABLE 5—Skin Tests with Purified Preparations Compared with Commercial Posterior Pituitary Extract (Obstetric)

	Pitressin (Purified)		Pitocin (Purified)		Posterior Pituitary Extract (Obstetric) (Commercial)	
	Scratch	Intra dermal	Scratch	Intra dermal	Scratch	Intra dermal
	A. Sensitive Patient (Case 3)					
Undiluted	—	++	—	++	+++	—
1:10	Slight blanching	Slight blanching	—	Slight blanching	+	—
1:100	—	Blanching	—	—	—	—
1:1000	—	Slight blanching	—	—	—	—
1:10,000	—	—	—	—	—	—
1:100,000	—	—	—	—	—	—
1:1,000,000	—	—	—	—	—	—
B. Non sensitive Control						
Undiluted	Slight blanching	Blanching	Slight blanching	Blanching	Slight blanching	Blanching
1:10	—	Blanching	—	Slight blanching	—	Blanching
1:100	—	Slight blanching	—	—	—	Slight blanching
1:1000	—	—	—	—	—	—
1:10,000	—	—	—	—	—	—
1:100,000	—	—	—	—	—	—
1:1,000,000	—	—	—	—	—	—

was taken for transfer. The skin tests remained strongly positive but reagins could no longer be demonstrated in the blood. This result is similar to that described by Tuft in a case of insulin sensitivity.⁶

March 4, 1935, local passive transfer was attempted in four recipients with the serum of cases 2 and 3 three months and one month, respectively, after the last pituitary injections. There was no transfer in any case. There was likewise no transfer in two recipients with the serum of the fourth patient which was taken April 4, 1935, two years after the last injection of pituitary extract. But in the fifth case local passive transfer was definitely positive to commercial pituitary extract in two recipients on April 15, 1935, more than two years after the last injection of pituitary. No transfer could be demonstrated, however, with our preparation of human pituitary extract, to which the patient herself was only slightly sensitive and which was weaker than the commercial preparation, as shown by the fact that its intradermal injection in normal persons produced very little blanching of the skin.

Commercial pituitary extract in pharmacologic doses is not a good antigen either for the guinea-pig or for man under ordinary conditions. Five guinea-pigs were given intradermal injections of the extract (obstetric, 0.2 cc) and tested after four days, nine days and three weeks by intradermal injection. The skin reactions in these animals were no different from those of the controls at any time. Thirty primiparas were tested with

6 Tuft, Louis. Insulin Hypersensitivity. Immunologic Considerations and Case Reports. Am J M Sc 176:707 (Nov) 1928.

7 The blanching effect of the vasopressor hormone interferes to a certain extent with the interpretation of skin tests in the guinea pig; hence a slightly positive reaction might be unapparent.

pituitary extract, obstetric, 1:10 dilution, by scratch and intradermal methods at two different times, namely, at the time of delivery when they received a postpartum injection of pituitary and nine days later before they left the hospital. In sixteen of these cases additional skin tests were made about six weeks later at the postpartum clinic. A diagrammatic record of the skin reactions was kept in each case so that comparisons could be made between the first and second or the first and third reactions in any one patient. Such comparisons were made but no evidence of sensitization was found in any case. Apparently special conditions are necessary for the development of hypersensitiveness to pituitary extract in man.

COMMENT

Hypersensitiveness to pituitary extract seems to be uncommon. However, the occurrence of five cases in one hospital in less than two years suggests the possibility that some cases have been unrecognized and others unreported. Pituitary preparations are used extensively in the practice of medicine especially in obstetrics and it seems that this condition would be worth keeping in mind in cases of obscure reactions following delivery when pituitary extract has been used.

This hypersensitiveness cannot be produced at will but occurs only in exceptional cases under conditions that are unknown at the present time. It is not merely a matter of certain individuals being predisposed while others are not. The predisposition, even in susceptible persons, is not always present. This is apparent from the fact that these patients had previous injections of pituitary extract which were without effect in producing hypersensitiveness. This predisposition then is apparently present only in certain individuals at certain times. The analogy with hay fever is at once apparent. Only a relatively small percentage of those who are exposed become sensitized, and of those who do become sensitized many were exposed ineffectively for years before sensitization developed. The persistent, high degree of sensitivity, the presence of reagins and the family or personal history of allergy in two of the patients constitute further evidence that these are not cases of the ordinary anaphylactic type of hypersensitiveness such as may be produced at will in laboratory animals and in man by the injection of a foreign serum.⁸

The absence of positive skin tests in four children born of three sensitized mothers with positive skin tests constitutes evidence against the idea of transplacental transmission of hypersensitiveness.

These cases undoubtedly represent organ specificity rather than species specificity, the specificity being directed toward some constituent of the pituitary gland of several animal species, including man.

SUMMARY

1. Hypersensitiveness to pituitary extract occurs in only a small percentage of exposed persons.

2. Skin tests with various substances indicate that this is an organ specific hypersensitiveness directed toward some constituent of the pituitary gland of several animal species including man.

3. This constituent is neither the vasopressor nor the oxytocic principle of the posterior pituitary.

Brown Building

⁸ Coca A. F., Walzer, Matthew and Thommen A. A. Asthma and Hay Fever: A Theory and Practice. Springfield, Ill. Charles C. Thomas, 1931. p. 38. Simon F. A. and Rackemann F. M. The Development of Hypersensitiveness in Man. J. Allergy 5: 439 (July) 1934.

MENSTRUAL EDEMA

THE REPORT OF A CASE CONTROLLED BY ENEMENIN
BUT NOT BY THELLOL OR THFELIN

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Thomas¹ has reported two cases in which edema occurred regularly and only during menstruation. One of these patients was given hypodermic injections of anterior pituitary extract and later the gonadotropic substance of pregnancy urine. With the latter therapy he was able to prevent the edema. Sweeney² reported observations on the body weight of forty-two normal healthy young women. Thirty per cent showed a gain of 3 or more pounds sometime during the menstrual

TABLE 1—Studies of Blood Lipids and Water Displacement Before and During Preliminary Treatment

Date	Free Cholesterol Mg per 100 Cc	Total Cholesterol Mg per 100 Cc	Total Fatty Acid Mg per 100 Cc	Water Displacement of One Foot Cc	Menstrual Period	Medication
Sept 1934						
7	79.7	141.5	469.7			
13	46	144.1	485.1		Sept 12-16	Gonadotropic principle from pregnancy urine
17	51.2	183.4	434.3			
22	66.9	233.2	446.6			
27	59.6	204.4	431.2			
Oct					Oct 13-14	
2	58.5	151.6	414.3			
8	57.5	149.3	446.4			
16	58.5	183.4	446.6			
22	52.4	158.6	432.8			
27	57.5	152	400.4	9.0		
Nov					Nov 9-12	
1	48.5	154.6	458.9	8.5		
6	56.3	160.8	408.1	98.0		
10	57.5	166	531.8	94.0		
15	58.5	207	423.5	92.0		
20	59.7	188.6	330	59.0		
27	43.0	141.5	331	97.0		
Dec					Dec 9-12	
1	39.7	146.7	334	85.5		
6	41.8	154.6	369.6	88.0		
11	40.8	141.5	362	87.0		
15	42.9	146.7	354	95.0	Dec 16-20	
20	53.3	178	408	95.0		
26	54.3	162.4	351	87.0		
29	50.7	167.7	402.9	85.5		
1935						
Jan						
4	61	220	48	97.0		
9	65.8	227.9	31	85.0	Jan 14-20	Enememin 12 cc daily
14	59.6	183	424	97.0		
19	55.4	178	447	94.5		
24	51	201.7	424	87.5		
29	70	193.8	523.6	85.0		
Feb					Feb 8-12	
4	52.2	200.3	400	85.5		
9	57.5	167	390	87.5		
14	71	223.3	434	87.0		
21	70	222.7	477	84.0		
March						
2	60.6	204.4	515.9	84.0		
7	55.4	230.6	462	84.0	March 8-12	
12	58.5	204.4	408	84.0		

cycle, usually just before the menstrual flow was established. Some had a true pitting edema. Okey and Stewart³ have also followed the weight of twenty women students and found an increase in weight of from 1 to 3 pounds (453 to 1360 Gm.) in one fourth of their subjects. Almost all the students who showed the gain in weight gave histories of menstrual headaches or discomfort. Eufinger and Spiegler⁴ observed a tendency to edema in 47 per cent of their subjects.

We have had the opportunity of observing a patient with pronounced menstrual edema of long standing in which certain blood chemical studies have been made and the condition prevented by the administration of

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¹ Thomas W. A. Generalized Edema Occurring Only at the Menstrual Period. J. A. M. A. 101: 1126 (Oct 7) 1933.

² Sweeney J. S. Menstrual Edema. J. A. M. A. 103: 254 (July 28) 1934.

³ Okey Ruth and Stewart Dorothy. J. Biol. Chem. 99: 717 (Feb.) 1933.

⁴ Eufinger H. and Spiegler R. Arch. f. Gynak. 135: 22, 1928.

emmenin (Collip) but not by theelol and theelin. The study has extended over a period of more than one year.

The more pertinent points are briefly as follows:

History—The patient is now 47 years of age and unmarried. Since the onset of menstruation at the age of 13 years the menses have been complicated by a swelling of the feet and legs. The feet would begin to swell about one week before menstruation and the swelling did not recede until a week after the cessation of the flow. The swelling would pit on pressure. During the past five years the edema has been worse than it had been previously, and considerably more marked

TABLE 2—Values of Water Displacement of One Foot During Administration of Theelol, Theelin and Emmenin

Date 1935	Water Displacement of One Foot, Cc	Menstrual Period	Medication
April 3	870	April 15 18	No emmenin since March 17
9	865		
13	880		
15	880		
20	880		
26	860	May 12 16	April 27 3 theelol capsules daily
30	860		
May 3	910		
9	920		
14	945		
19	960	June 9 12	May 20 June 8 2 cc theelin every alternate day
23	945		
27	960		
30	960		
June 3	920		
	Patient did not measure swelling which she says remained until June 17, when it started to de- crease but was not markedly diminished until about July 12	June 8 18	1 cc emmenin daily
		June 23 28	10 cc emmenin daily
		June 29	on 1 cc emmenin daily
July		July 9 12	
20	845		
23	840		
26	845		
29	835		
Aug 1	830		
5	845	Aug 9 8	
9	835		
11	830		

during the past year with some edema constantly present. The edema showed diurnal variation, being greater at bedtime. Frontal headaches, epistaxis and herpes simplex usually have accompanied the edema. Menopausal symptoms have not appeared and the periods have been regular, occurring in a twenty-six to thirty day cycle and lasting four days. The body temperature and blood cells were normal. The bleeding time was normal. The blood pressure was 138 systolic, 88 diastolic. There were no casts and no albumin in the urine. The basal metabolic rate was minus 19. The blood proteins were normal and showed no appreciable variation during a complete menstrual cycle. The individual determinations at weekly intervals were 8.52, 9.1, 9.25 and 8.6 Gm per hundred cubic centimeters. Roentgen study of the sella turcica revealed no abnormality.

Preliminary Therapeutic Tests—Desiccated thyroid (0.12 Gm daily) was administered. The basal metabolic rate was elevated to normal, but the edema was not influenced. The degree of edema was followed daily throughout the study by measuring the water displacement of the feet. The edema was not influenced by ammonium nitrate, potassium chloride, calcium gluconate or viosterol therapy.

Blood Lipid Studies—It was decided to study the blood lipids during the menstrual cycle in this patient both before and after endocrine therapy.

This was considered important because of the observations of Okey and Bowden⁵ and others.⁴ Okey and Bowden found that blood cholesterol decreased almost invariably during or just prior to the onset of the menses. This decrease was usually preceded or followed by a rise in blood cholesterol above the normal average. This was confirmed by Kaufmann and Muhlbach,⁶ who further stated that in patients with ovarian dis-

turbances the rhythmic variation in blood cholesterol did not occur. Okey⁵ noted in addition that Dahlmös and Solé⁷ and Degkwitz⁸ had suggested that cholesterol acts in the blood as a lyophobic colloid, while lecithin acts as a lyophilic colloid. Therefore Okey, observing variations in the cholesterol-lecithin ratio in blood during the menstrual period, has intimated that this may be the cause of the edema, i. e., that a low cholesterol and a relatively high lecithin content may cause the tissues to imbibe water.

We have determined the total and free cholesterol and the total fatty acids at five day intervals in this patient over a period of six months. During a portion of this period no therapy was given at other times gonadotropic principle from pregnancy urine and emmenin⁹ were given.

Without treatment a regular premenstrual fall in blood cholesterol did not occur (table 1). According to Kaufmann and Muhlbach⁶ this would indicate an ovarian dysfunction.

Pregnancy-urine extract (12,000 rat units) was then given during a period of two months. A reduction in the amount of edema resulted. On withdrawal the edema returned. It was then given again, but with little effect on the edema, and finally was discontinued because it apparently had produced metrorrhagia. The blood cholesterol and total fatty acids were not significantly altered (table 1).

Administration of Emmenin (ether insoluble complex from placenta, relatively inert in ovariectomized rats but estrogenically active in the presence of immature or atrophic ovaries)—The administration of emmenin (12 cc daily, 60 day oral units-Collip) resulted in a complete disappearance of the edema including that which persisted between periods (table 1). When the emmenin was withdrawn, the edema reappeared with the next menstrual cycle. While the patient was taking emmenin there was no significant change in the basal metabolic rate.

TABLE 3—Blood Lipid Studies During Administration of Emmenin

Date 1935	Free Cholesterol Mg per 100 Cc	Total Cholesterol Mg per 100 Cc	Total Fatty Acid Mg per 100 Cc	Water Displacement of One Foot Cc	Menstrual Period	Medication
Aug 14	51	180.8	600	Aug 9 1935	Jan 7 1936	1 cc of emmenin daily since June 28
19	72.3	199.1	423.5			
24	63.7	120.1	454			
29	65.8	140.3	500			
Sept 4	61.4	227.7	568.2			
9	55.4	188.6	446.6	830-840	Sept 1-1	Emmenin stopped Oct 14
14	58.5	178.2	446.6			
19	58.5	170.0	469.7			
24	62.7	160.4	490.2			
30	64.8	180.8	460.6			
Oct 5	70	212.2	510.9		Oct 30	Emmenin started Nov 8
Nov 18	64.8	180.8	500			
23	59.6	190.1	480.4			
30	60.6	183.4	479.7			
Dec 5	61.7	172.9	477.4			
10	50.2	152	418.8		Dec 7-10	
16	60.2	172.9	477.4			
21	66.9	199.1	492.8			
24	55.4	180.4	463.7			
1936						
Jan 2	60.8	172.9	500.4			
7	53.3	175.5	510.4			

(—175) and the menstrual headaches did not occur. A significant change in the blood lipids was not observed during the period of study (tables 1 and 3).

Administration of Theelin—Collip, Browne and Thomson¹⁰ regard emmenin as a hydrolyzable compound of trihydroxy-estrin (theelol), the active principle of which is converted to some more potent substance in the presence of ovarian tissue. Theelol is liberated from emmenin by autoclaving with acetic acid. Although theelol, like emmenin, is active by mouth the difference in the solubility of the two may render possible physiologic differentiation in activity, or more probably

7 Dahlmös J and Solé A. *Biochem Ztschr* 227:401 1930

8 Degkwitz R. *Klin Wchnschr* 9:2536 (Dec 13) 1930

9 The gonadotropic principle from pregnancy urine theelol and theelin were supplied through the courtesy of Dr. Oliver Hamm of Parke Davis & Co. The emmenin was supplied by Averst McKenna and Harrison Ltd.

10 Collip J. B. Browne J. S. L. and Thomson D. I. *Endocrinology* 18:71 (Jan Feb) 1934

emmenin may contain an unknown substance in addition to the estrin complex. Except for these possibilities theelol, in doses of equal estrogenic potency, should be effective. To test this possibility theelol was given the patient.

Theelol (150 rat units) was given daily for one month. The edema was not influenced (table 2).

Administration of Theelin.—Because emmenin has a powerful estrogenic potency when given orally, it was decided to ascertain if theelin hypodermically would prevent the edema. Theelin (600 rat units every alternate day) was given for two and one-half weeks. In the doses used it had no effect on the edema (table 2). One might not expect such doses to have an effect because it has been stated that very large doses (65 000 rat units)¹¹ are required to produce a definite effect in women.

Following the trial with theelol and theelin emmenin again had a beneficial effect (table 3).

Two other patients with a similar history of premenstrual edema have been given emmenin with subsidence of the swelling.

SUMMARY

Certain therapeutic procedures administered with the object of preventing edema failed with the exception of the administration of the gonadotropic principle from pregnancy urine, which was slightly effective, and emmenin (Collip), which was markedly effective. The blood lipids, which varied considerably, were followed for more than ten months in one patient and were not significantly or strikingly influenced.

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THE FREI TEST FOR LYMPHO-GRANULOMA INGUINALE

EXPERIENCES WITH ANTIGENS MADE FROM MOUSE BRAIN

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Since Frei¹ demonstrated that an antigen, made from sterile pus aspirated from previously unruptured abscesses, produced a reaction in patients with lymphogranuloma inguinale when injected intradermally, many attempts have been made to find other reliable sources for this antigen. Satisfactory antigens have been made by grinding up infected glands and periglandular tissues, and there have been reports of antigens made from pus from rectal fistulas occurring in patients with the late manifestations of this disease. This reaction is an important aid in the diagnosis of lymphogranuloma inguinale.

It is now well known that mice can be infected with lymphogranuloma inguinale by intracerebral inoculation of material from early crises and that the infection can be passed through several generations. One of the means of determining whether an animal has been infected with the disease is by making an antigen from the brain tissue and testing this on patients known to have the disease. Grace and Suskind² state that "evidence of the presence of the virus of lymphogranuloma inguinale in the brains of the dead mice was furnished by the production of highly potent Frei antigens from these brains and also that normal mouse brains prepared and tested as Frei antigens do not produce any

appreciable reactions." An antigen made from infected mouse brain has recently been produced and sold for the diagnosis of lymphogranuloma inguinale.

We have been interested in transmitting this disease to mice and in testing antigens made from mouse brain and have noted that such antigens when freshly prepared and injected into the skin of normal controls have regularly produced a small erythematous papule about 2 mm in diameter.

EXPERIMENT 1.—In order to see whether the antigen prepared from mouse brain and sold commercially produced a similar reaction in normal persons the following experiment was performed.

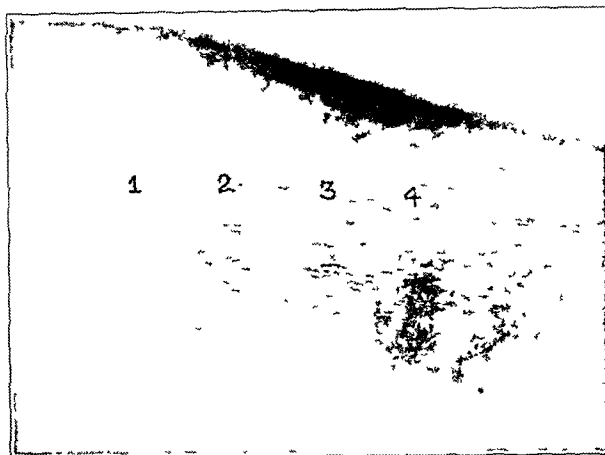


Fig. 1 (subject M. J. S.)—Results in experiment 1. The numbers correspond to the numbers of the antigens as given in the text.

formed. We were used as normal subjects and the following substances were injected intradermally: (1) a tested Frei antigen made from pus from an inguinal abscess; (2) an antigen made five months before from the brain of a mouse infected with lymphogranuloma inguinale; (3) an antigen made five and one-half months before from the brain of a normal mouse; and (4) the commercial Frei antigen. At the end of forty-eight hours there was no reaction at the site of injection of the antigen made from pus but at the site of each of the other injections there was seen a dome-shaped papule from 5 to 7 mm in diameter with a surrounding erythematous area about 1.5 cm in diameter.

It was apparent that all these reactions were more marked than had been seen before in normal subjects. That the subjects did not have lymphogranuloma inguinale was clearly shown in two ways: (1) the negative reaction to a potent Frei antigen made from human material and (2) the fact that an antigen made from the brain of a normal mouse gave the same reaction as one from the brain of an infected mouse. The only difference between our previous experiments and the present one was that the material injected in this experiment was five months or more old and previously antigens had been tested as soon after their preparation as possible. Accordingly an antigen was freshly prepared from the brain of a normal mouse and injected intradermally at the same time as the old antigen from normal mouse brain that had been used before. There was a marked difference in the results, the freshly prepared antigen producing a papule only 2 mm in diameter and the old antigen a papule 6 mm in diameter.

11 Kaufmann C. *Zentralbl f. Bakter.* 57:42 (Jan. 7) 1933.
From the Department of Internal Medicine and the Division of Dermatology, Yale University School of Medicine.

1 Frei Wilhelm. *Klin. Wochenschr.* 4:2148 (Nov. 5) 1925.
2 Grace A. W. and Suskind I. H. *Proc. Soc. Exper. Biol. & Med.* 22:1 (Oct.) 1934.

3 The antigen was prepared by grinding the brain of one mouse under aseptic precautions with a mortar and pestle and without any abrasive until a smooth paste was obtained. To this paste 4 cc. of Savin broth was added drop by drop with constant grinding. The mixture was then sealed in tubes and inactivated in the water bath at 60°C. for two hours the first day and one hour the second day.

It seemed therefore that some change had taken place over a period of five months in the antigen made from normal mouse brain so that on intradermal injection into normal subjects a reaction similar in appearance to a positive Frei reaction was induced.

EXPERIMENT 2—The following materials were injected intradermally in the same subjects and, in addition, in a patient in the wards of the New Haven Hospital who showed no evidence of having or having had lymphogranuloma inguinale.

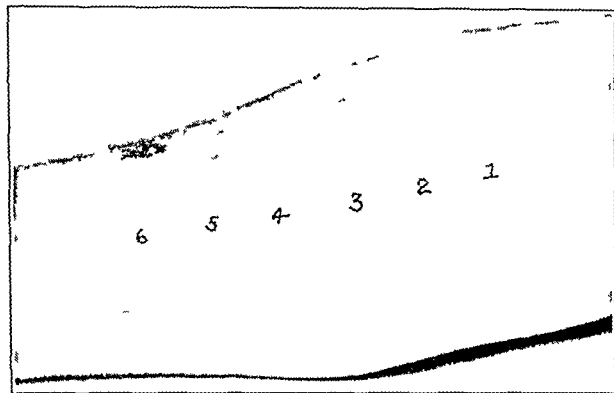


Fig. 2 (subject M J S)—Results in experiment 2. The numbers correspond to the numbers of the antigens as given in the text.

(1) a tested Frei antigen made from pus from an inguinal abscess, (2) an antigen made seven months before from the brains of mice infected with lymphogranuloma inguinale, (3) an antigen made seven and one-half months before from the brain of a normal mouse, (4) the commercial Frei antigen, (5) an antigen made four weeks before from the brain of a normal mouse, and (6) the same antigen, which had been dried in vacuo⁴ immediately on preparation and prepared for injection on the day of the experiment.

TABLE 1—Results in Experiment 3

Antigen and Date of Preparation	Readings 10/10/35			
	Size of Papules in Millimeters			
	Normal Subjects		Patients with Lymphogranuloma Inguinale	
	M E H	M J S	M G	N S
1 Lymphogranuloma mouse brain 1/16/35	4	5	4	5
2 Normal mouse brain 1/21/35	0	4	4	6
3 Normal mouse brain 8/8/35	6	4	6	8
4 Normal mouse brain dried 8/8/35 prepared 9/6/35	2	0	3	4
5 Normal mouse brain dried 8/8/35 prepared 10/8/35	4	4	2	4
6 Normal mouse brain in saline solution 10/7/35	2	4	4	3
7 Normal mouse brain in broth 10/7/35	0	4	4	5
8 Lymphogranuloma mouse brain 10/7/35	2	4	6	7
9 Frei antigen made from infected gland	0	0	6	6
10 Commercial Frei antigen	4	5	Not done	Not done

Since the results in all three subjects were closely parallel they will be given in detail for only one subject (M J S). To antigen 1 there was no reaction, to 2 there was a papule 4 mm in diameter with a surrounding erythema 10 mm in diameter, to 3 a papule 5 mm in diameter with a surrounding erythema 12 mm in diameter, to 4 a papule 7 mm in diameter with a surrounding erythema 14 mm in diameter, to 5 a papule 6 mm in diameter with a surrounding erythema 14 mm in diameter, and to 6 a papule 3 mm in diameter with no appreciable surrounding erythema.

⁴ The antigen was prepared from the brain of a normal mouse and dried in vacuo in the frozen state the Mudd Flösdorf apparatus being used. It was prepared for use subsequently by making it up to the original volume with saline solution.

Again the antigen made from pus gave entirely negative results. The other antigens made from mouse brain gave appreciable reactions with some minor variations between the individual antigens, and it was noteworthy that an antigen prepared only one month before had already developed the ability to induce positive reactions. The same mouse brain antigen that had been preserved in the dried state had not. The remainder of this antigen was kept in the icebox for one month for a further experiment.

EXPERIMENT 3—The two original subjects were used with the addition of two patients in the early active stages of lymphogranuloma inguinale. The antigens used were as follows:

(1) lymphogranuloma mouse brain prepared more than eight months before, (2) normal mouse brain prepared more than eight months before, (3) normal mouse brain prepared two months before, (4) the same mouse brain dried two months before and prepared for injection one month before, (5) the same mouse brain dried two months before and prepared for injection on the day of the experiment, (6) normal mouse brain prepared the day before the experiment saline solution being used instead of broth, (7) normal mouse brain prepared with broth the day before the experiment, (8) lymphogranuloma mouse brain prepared the day before the experiment, (9) a tested Frei antigen made from excised glands from one of the patients used in the experiment and (10) the commercial Frei antigen (used in the two normals only). The size of the resulting papules appears in table 1.

With a total of thirty-eight intradermal injections, it was not surprising that a few discrepancies appeared. At the time of injection it was suspected that antigen 2 in the case of M E H was injected almost entirely hypodermically instead of intradermally. We cannot explain other discrepancies such as the failure to react of antigen 4 in M J S and antigen 7 in M E H and the unusually strong reaction of N S to antigen 3. In spite of these discrepancies a few facts were evident. It was clear that the two normal subjects had not been infected with lymphogranuloma inguinale, as shown by the absence of reaction to antigen 9. The

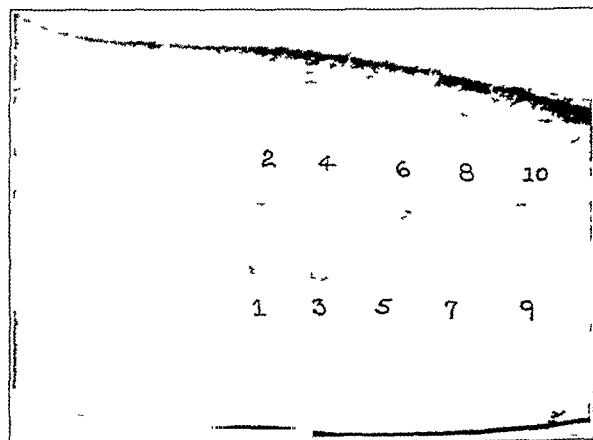


Fig. 3 (subject M J S)—Results in experiment 3. The numbers correspond to the numbers of the antigens in table 1.

results with all the mouse brain antigens showed that, regardless of whether or not the mice had been infected with lymphogranuloma inguinale, an antigen made from mouse brain was capable of producing an appreciable reaction when injected intradermally.

The reactions induced by antigen 4 seem to indicate that the change which takes place in mouse brain antigens causing these false reactions may take place within two months even if the antigen is preserved in the dried

state. Comparisons of the papules induced by antigens 6 and 7 make it appear that at the time of preparation there was no marked difference between an antigen prepared with saline solution and one prepared with broth.

EXPERIMENT 4—Although the normal subjects used in these experiments showed a marked reaction to antigens made from mouse brain from the first, it was possible that the succeeding reactions were due to an acquired sensitivity to mouse brain. To rule this out, various antigens were injected intradermally into six subjects in whom there was neither history nor evidence of lymphogranuloma inguinale and who had never had injections of any material made from mouse brain. The same antigens were injected into three patients with lymphogranuloma inguinale and in one questionable case. The following antigens were used: (1) a Frei antigen made from pus, (2) a Frei antigen made from excised glands removed from one of the patients used in the experiments, (3) lymphogranuloma mouse brain prepared more than nine months before, (4) lymphogranuloma mouse brain prepared one month before, (5) the commercial Frei antigen, (6) normal mouse brain prepared more than nine months before, (7) normal mouse brain prepared more than three months before, (8) normal mouse brain prepared with saline solution instead of broth approximately two months before, (9) normal mouse brain prepared with

sensitivity of different subjects would explain the two weak reactions to one of the Frei antigens in two of the normal subjects (H H and M M). It was impossible to draw the conclusion that these two subjects had lymphogranuloma inguinale, as in each case the reaction was considerably less than that considered as a typically positive Frei test, and in each case the subject failed to react at all to another Frei antigen.

That mouse brain is capable of inducing in normal subjects a reaction sufficiently marked to be mistaken for a Frei reaction was evident from an analysis of the results. Forty-eight injections of mouse brain were made in the normal controls. In twenty-one, or 43.8 per cent, the reactions were 6 mm or more in diameter and indistinguishable from positive Frei reactions. In seventeen, or 35 per cent, they were from 4 to 5 mm in diameter or easily mistakable for positive Frei reactions. In the group of patients having lymphogranuloma inguinale we could only consider in the same manner the injections of normal mouse brain. There were twenty such injections. With the same criteria as before, three of these, or 15 per cent, were indistinguishable from positive Frei tests, but fifteen, or 75 per

TABLE 2—Results in Experiment 4

Antigen and Date of Preparation	Readings on 11/12/35																			
	Size of Papules in Millimeters																			
	Normal Subjects										Patients with Lympho granuloma Inguinale						Questionable Case Female F			
	Male					Female					Male									
	N	D	E	H	H	W	J	W	P	M	M	D	L	N	S	M		G	J	M
																				McV
1 Frei antigen made from pus	0			3		0		0		1		0		8		6		5		2
2 Frei antigen made from infected gland	0			0		0		0		0		0		7		6		5		2
3 Lymphogranuloma mouse brain 2/5/35	7			5		4		6		3		4		5		6		6		3
4 Lymphogranuloma mouse brain 10/1/35	6			6		2		6		4		2		7		6		7		5
5 Commercial Frei antigen	7			7		5		6		3		2		8		6		5		5
6 Normal mouse brain 2/1/35	6			4		2		4		3		2		4		4		5		4
7 Normal mouse brain in broth 8/5/35	8			5		7		7		5		6		4		6		6		5
8 Normal mouse brain in saline solution 9/14/35	7			5		5		7		2		4		4		4		3		4
9 Normal mouse brain in broth 11/11/35	6			4		4		7		4		6		7		3		4		5
10 Normal mouse brain in saline solution 11/11/35	6			6		5		6		3		5		4		4		4		4

broth the day before the experiment, and (10) normal mouse brain prepared with saline solution the day before the experiment. The results appear in table 2.

It should be noted that F McV was not included in the group of patients having lymphogranuloma inguinale because many tests in this patient with Frei antigens made from human material have resulted in papules that were smaller than those generally considered positive tests. This patient was a young white woman in whose history and physical examination there was nothing suggestive of lymphogranuloma inguinale. She was referred for Frei tests because of an unhealed ulceration over the scrum which followed the surgical removal of a pilonidal cyst. As can be seen from table 2 the difference between the size of the papules resulting from intradermal injections in this patient and in patients with typical lymphogranuloma inguinale was greater with Frei antigens made from human material than with antigens made from the brains of mice inoculated with lymphogranuloma inguinale.

The group of patients could be definitely differentiated from the group of normal subjects by the reaction to the two antigens (1 and 2) made from human material. Throughout the experiments it was quite evident that there was considerable variation both in the antigenic properties of the materials injected and in the sensitivity of different subjects. The individual

cent, were easily mistakable for positive Frei tests. It was also noted that of twenty injections of lymphogranulomatous material made either from mouse brain or from human material in this group, nine, or almost one-half the reactions, were less than 6 mm in diameter.

That intradermal injection of mouse brain in patients known to have lymphogranuloma inguinale is a valuable method for determining whether the mouse has been infected with lymphogranuloma inguinale is evident from a comparison of the papules resulting from such injections with those resulting from the injection of material from normal mice. In table 2 it can be seen that in isolated instances the injection of normal mouse brain in the three patients with typical lymphogranuloma inguinale induced a reaction easily mistakable for a true Frei reaction. The majority of these injections resulted in the formation of a papule less than 6 mm in diameter. Injection in the same patients of antigens made from the brains of mice that had been inoculated with the disease resulted with few exceptions in larger papules. In these patients the papules induced by lymphogranuloma mouse brain averaged 6.22 mm in diameter and those induced by normal mouse brain averaged 4.4 mm. Comparison of the results in these three patients with the results in the questionable diagnostic case shows that there was an appreciable difference when lymphogranuloma mouse

brain was used, the three antigens giving rise to papules averaging 4.33 mm against 6.22 mm in the known cases

COMMENT

The circular that accompanies the Frei antigen sold commercially gives as the criterion of a positive Frei reaction "an erythematous papule not less than six millimeters in diameter surrounded by a less erythematous zone of varying size." It must be admitted that the size of a papule does not lend itself to exact measurement and for this reason it is quite conceivable that a papule 5 or even 4 mm in diameter might frequently be read as a positive test. The experiments cited show that, irrespective of whether the mouse had been infected with lymphogranuloma inguinale or not, an antigen made from the brain of a mouse may induce a reaction similar to the Frei reaction when injected intradermally. In this series of experiments nearly half the reactions to mouse brain antigens injected intradermally into normal subjects were of such a nature as to make them indistinguishable from what is recognized as a positive Frei test, and some of the reactions were of such size and character as to make them easily mistakable for positive Frei reactions.

False reactions may result from freshly prepared mouse brain antigen but in our experience are to be watched for when using material that has been stored a month or more. The indications are also that preparation of the antigens with saline solution instead of broth does not influence the reaction. It would seem from experiment 2 that if the antigen is preserved in the dried state the appearance of the false reaction may be prevented for a period of one month although

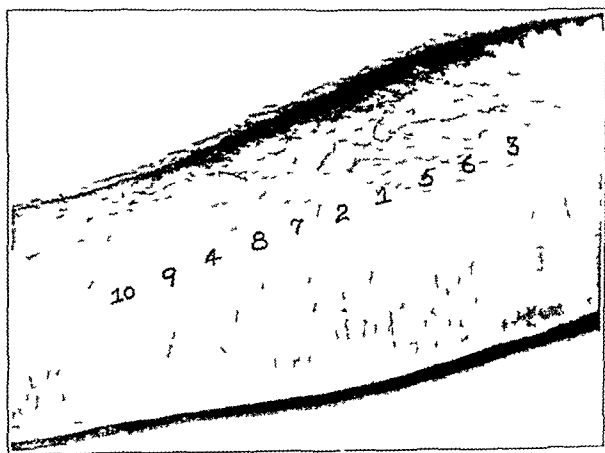


Fig. 4 (subject N D E)—Results in experiment 4. The numbers correspond to the numbers of the antigens in table 2.

the results of the third experiment make it seem that in some antigens at least the change may take place even in the dried state by the end of two months.

The regularity with which tested Frei antigens made from human material were negative is conclusive proof that the normal subjects did not have lymphogranuloma inguinale, and even if the total number of subjects was small being only thirteen the fact that definite reactions to antigens made from the brains of normal mice occurred in all of them and reactions indistinguishable from positive Frei tests in many instances justifies the conclusion that sensitivity to mouse brain is common enough to lead to a large number of false positive reactions if mouse brain antigens are used for the diagnosis of lymphogranuloma inguinale.

CONCLUSIONS

- 1 Some change occurs in antigens made from mouse brain within a few weeks after preparation which, when injected intradermally, gives rise to a reaction almost indistinguishable from a true positive reaction.
 - 2 The nature of this change is at present unknown.
 - 3 This occurs in antigens made from the brains of normal mice as well as in antigens made from the brains of mice inoculated with lymphogranuloma inguinale.
 - 4 The false reaction is induced in normal subjects as well as in patients with lymphogranuloma inguinale.
 - 5 For this reason Frei antigens made from mouse brain would not appear to be suitable for the routine diagnosis of lymphogranuloma inguinale.
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AUTOTRANSFUSION IN THE TREATMENT OF WOUNDS OF THE HEART

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Penetrating wounds of the heart usually are rapidly fatal. In spite of the fact that the infrequency of the condition prevents any one man from acquiring a wide experience, analysis of reports collected from the literature, as well as facts obtained from animal experimentation, have established methods which are proving their value in the increased number of successful cases that have been reported in the last few years. This is verified by the periodic reviews of the literature, which have shown a decline in the mortality rate from 63.7 per cent, as reported by Peck¹ in 1909 to 34 per cent as reported by Ramsdell² in 1934, given in the accompanying table. It is our desire to call attention to a procedure which, if used more frequently in certain types of injury, may possibly result in a further reduction in the mortality rate. Descriptions of the various surgical approaches, as well as the technic of cardiorrhaphy, need not be included here, for they may be found in many articles on the subject notably those by Beck³ and Cutler.⁴

Hemorrhage is the most common cause of death in the group in which the patient lingers sufficiently long to reach the hospital, whether it is limited to the pericardial cavity, where it gradually chokes the heart by increasing the intrapericardial pressure or whether it escapes into one of the pleural spaces, causing exsanguination. It is difficult to determine which of these two mechanisms occurs the more frequently although, according to Singleton,⁵ massive hemorrhage is probably a more frequent cause of death than cardiac tamponade. In a series of seven cases of stab wound and three cases of gunshot wound of the heart which he reported hemorrhage into one of the pleural cavities was present in six and was the direct cause of death in three of these. Cardiac tamponade was found in two cases.

- 1 Peck, C. H. The Operative Treatment of Heart Wounds. *Ann Surg.* 50: 100-154 (July) 1909.
- 2 Ramsdell, E. G. Stab Wounds of the Heart. *Ann Surg.* 99: 141-151 (Jan.) 1914.
- 3 Beck, C. S. Wounds of the Heart. *The Technic of Suture Arch Surg.* 13: 205-227 (Aug.) 1926.
- 4 Cutler, E. C. and Beck, C. S. Surgery of the Heart and Pericardium, in Nelson's *Surgery*, 4: 267-286, 1927.
- 5 Singleton, A. O. Wounds of the Heart and a Discussion of the Causes of Death. *Am. J. Surg.* 20: 515-532 (June) 1933.

When there is a communication between the pericardial and the pleural cavities with an extensive loss of blood, transfusion is secondary in importance only to the control of the bleeding. However, it is not always easy to find a suitable donor, and unless professional donors are readily available considerable time may be lost before the necessary blood can be obtained.

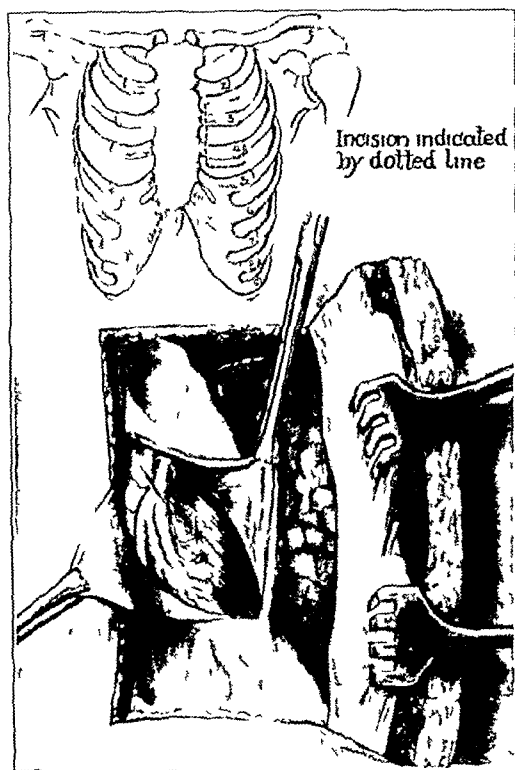


Fig. 1—Laceration of pericardium enlarged to show location of heart wound.

A procedure suggested by Rhodes,⁶ which represents the easiest and quickest method of combating this blood loss, is recovery and reinfusion of the patient's own

Decline in Mortality Rate from Penetrating Wounds of the Heart as Shown in Reviews of Cases Reported in Medical Literature

Author	Total Cases	Recovered	Deaths	Mortality per Cent
Leek C. H. Ann Surg 70 100 (July) 1909	100	58	102	63.7
Pool I. H. Ann Surg 75 480 (April) 1917	77	47	30	40.0
Smith W. R. Ann Surg 78 696 (Dec) 1913	8	39	19	30
Schoenfeld H. H. Ann Surg 87 87 (June) 1915	20	16	9	36.0
Ramsdell F. C. Ann Surg 99 141 (Jan) 1934	90	33	17	34.0

blood. Autotransfusion, or autohemotransfusion as it is sometimes called, is not a new idea although its modern application has been limited almost entirely to the use of blood found in the peritoneal cavity following severe intra-abdominal hemorrhage notably that resulting from rupture of an ectopic pregnancy. The use of blood obtained from the pleural cavity following injury to the thoracic cage or its contents has been

regarded with suspicion because of the fear of contamination. In spite of this objection there have been no unfavorable results reported in the few cases in which it has been used, and when cultures were taken the blood was found to be sterile.

The earliest reports on the reinfusion of blood obtained from the pleural cavity were based on the experiences of army surgeons in the late war. Elmendorf, working as a battalion surgeon in the German army, reported its use in the treatment of a soldier who had a massive hemothorax resulting from a gunshot wound of the right side of the chest, which threatened to prove fatal. He aspirated 300 cc of blood from the pleural cavity and reinfused it into a vein of the arm with almost immediate improvement in the patient's condition and with ultimate recovery. Wederhake⁸ reported similar results, stating that he had used autotransfusion successfully in several cases of hemothorax due to gunshot wounds of the lung without having observed any deleterious effects.

The only other cases that we have been able to find in the literature are those reported by Brown and Debenham⁹ the hemothorax being due to fractured ribs in one case to a stab wound of the left side of the chest in another, and to a gunshot wound of the right side of the chest in a third. Autotransfusion was used in



Fig. 2—Appearance of the patient four months after discharge from the hospital.

each of these, with recovery of the patient. Culture of the blood from the hemothorax in the stab wound case was sterile.

7 Elmendorf. Ueber Wiederinfusion nach Punktion eines frischen Hemothorax. Munchen med. Wehnschr. 64 36 37 (Jan 2) 1917.
8 Wederhake. Ueberpflanzung (Transfusion) von Blut. Munchen med. Wehnschr. 64 1471 1473 (Nov 6) 1917.
9 Brown A. L. and Debenham M. W. Autotransfusion. Use of Blood from Hemothorax. J. A. M. A. 96 1223 1225 (April 11) 1931.

6 Rhodes, R. I. Suture of Stab Wound of the Heart. Ann Surg 81 75, 760 (April) 1925.

Rhodes, reporting his results in the treatment of stab wounds of the heart, suggested aspiration of the blood from the pleural cavity for reinfusion. "If this were done at the beginning of the operation, or even while the patient was being prepared and anesthetized, the blood collected in a vessel containing sodium citrate to prevent further clotting, it would offer the possibility of reuse, either injected into a vein or directly into the cavity of the left ventricle and might therefore be a means of saving a few additional lives." In one instance he attempted to use the blood found in the pleural cavity during operation, but it contained many clots, and before it could be filtered for reinjection the patient died.

That it is a valuable procedure worthy of trial is shown by the following report, in which we feel that it meant the difference between success and failure of the operation.

REPORT OF CASE

C. C., a white youth aged 16 admitted to the emergency room of the Presbyterian Hospital Nov. 17, 1934 had been stabbed in the left side of the chest about forty-five minutes previously. He had been working in his father's butcher shop

when he became involved in an argument with another boy over a small sum of money. His antagonist picked up a short butcher knife pressed it against his chest and asked him how he would like to be stabbed. He felt the point of the blade but had no knowledge of any injury until after he had walked about ten paces to another counter to get some meat when he suddenly felt faint and collapsed. He was brought to the hospital where he was found to be unconscious and in an extreme state of shock. He was bleeding rather profusely from a 1 cm wound in the third left

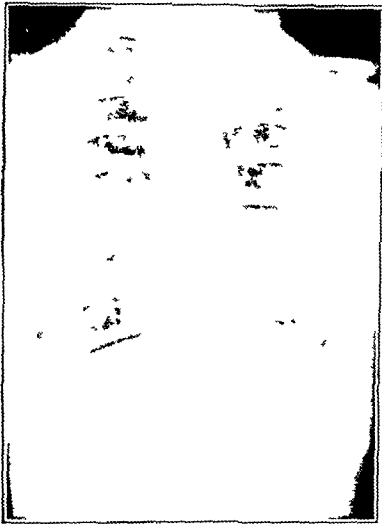


Fig. 3—Roentgen appearance of the chest four months after discharge from the hospital.

intercostal space about 5 cm to the left of the midsternal line. The wound edges were gaping and there was a loud sucking sound on each inspiration with a soft interrupted blowing sound on expiration. The apex impulse of the heart could be felt in the fifth left intercostal space just medial to the mid-clavicular line, but was very weak and irregular. On auscultation the heart sounds were distant and muffled. The rate was estimated at between 145 and 160 beats per minute. There was no perceptible radial pulse. The respiratory rate was 50. The respirations were shallow and produced little excursion on the left side. Anteriorly the lower left portion of the chest was markedly hyperresonant to percussion while posteriorly it was flat. Breath sounds were absent over the entire left side of the chest except at the apex where they were practically normal. A diagnosis was made of stab wound of the left side of the chest, probable stab wound of the heart, left hemothorax and shock.

The patient was treated for shock and was taken to the operating room as soon as it could be made ready. Under local anesthesia an incision was made along the left margin of the sternum and then extended laterally at its ends between the second and third and the fourth and fifth ribs. The costal cartilages were divided, the parietal pleura was incised and the flap was retracted laterally. There was so much blood in the pleural cavity that it was impossible to determine the

source of bleeding. With the idea of saving some of the blood for reinfusion an attempt was made to empty the pleural cavity with a large syringe, but it filled up as rapidly as the blood was removed, so this was soon abandoned in favor of large dry packs which were plunged into the cavity and were then wrung out into a beaker containing 50 cc of a 2 per cent solution of sodium citrate. Seven hundred cubic centimeters of blood was recovered in this manner. A wound was now apparent which extended through the pericardium and crossed the upper end of the anterior longitudinal sulcus of the heart having divided the anterior descending branches of the left coronary vessels without extending into the ventricle. The edges of the pericardium were grasped with Allis forceps and a tanned chromic suture on an atraumatic needle was passed through the upper angle of the pericardial wound into the heart. From above down five sutures in all were inserted, bleeding evidently being controlled by the first two. Another opening was then made in the pericardium and the surface of the heart explored for evidence of further injury. This was left open to avoid the development of a pericardial effusion. A large amount of blood, fully as much as had been removed, was left in the pleural cavity. The costal cartilages were approximated and the incision was closed in layers without drainage.

While the operation was progressing an intravenous set was made ready, and the recovered blood was filtered through several layers of gauze and reinserted into one of the veins of the arm. The patient had received only 200 cc of blood when he began to regain consciousness. A donor had been obtained by the time the operation had been completed but the patient's condition was considered sufficiently satisfactory not to necessitate the use of any more blood. A Kahn test of the donor's blood was subsequently reported to be positive for syphilis.

The patient was returned to his room and placed in an oxygen tent where he was kept for three days, with gradual improvement in his condition and with a steady decline of the temperature, pulse and respirations toward normal. The blood pressure remained constant at 130 systolic and 80 diastolic. Examination of the blood showed 3,200,000 red blood cells and 73 per cent hemoglobin (Sahli). After removal of the oxygen tent his condition remained unchanged except for a daily elevation of temperature and evidence on physical examination of an increasing amount of fluid in the left pleural cavity. Aspiration of the chest on the seventh day yielded 900 cc of a sterile serosanguineous fluid and similar amounts were removed every other day until the eleventh day when the upper angle of the wound broke down resulting in an open hydropneumothorax. This was followed by the development of an empyema showing *Staphylococcus aureus* which was controlled fairly well by postural drainage until the twenty-second day when the incision was finally healed. Aspirations of the chest were again resorted to with the removal of about 500 cc of pus every third or fourth day. A transfusion of 300 cc of citrated blood was given as supportive treatment. Repeated roentgen examinations of the chest eventually revealed a walling off of the empyema cavity limiting it to the upper half of the left side of the chest and this was drained by means of a rib resection on the sixtieth day. Following this his convalescence was entirely uneventful and he was discharged from the hospital eighty-three days after admission. Examination at this time was negative, except for some diminution in the anteroposterior diameter of the left side of the chest with evidence of thickened pleura. An electrocardiogram was reported as showing signs characteristic of early coronary involvement.

Four months later he returned for examination stating that he felt fine and was working again. The chest was essentially unchanged except for some improvement in the deformity, and a roentgenogram showed thickened pleura but normal heart and lung shadows. An electrocardiogram was negative.

SUMMARY

Autotransfusion was used to combat the excessive loss of blood resulting from a stab wound of the heart.

As far as we can determine by a review of the literature this is the first time autotransfusion has been used in the treatment of this type of injury. In view

of its marked success in this instance, we believe that it should receive further trial as an adjunct to cardiorrhaphy in those cases in which the loss of blood is sufficient to threaten the immediate survival of the patient

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PAIN IN THE SHOULDER GIRDLE, ARM AND PRECORDIUM DUE TO CERVICAL ARTHRITIS

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This paper is concerned with the study and treatment of a group of cases in which, with the exception of one, the outstanding symptom was pain in the vicinity of the shoulder girdle and arm. In these cases, evidence of local disease of the arm and shoulder was absent and the pain was probably a manifestation of irritation or actual inflammation (radiculitis) of cervical spinal nerve roots due to cervical arthritis. In the one excepted case, precordial pain was the outstanding feature and was similarly due to a radiculitis or irritation of nerve roots due to cervical arthritis. It is believed that cases of this type are more frequent than is generally supposed. Their prompt recognition has led in most instances to complete therapeutic relief. The present paper is essentially a clinical one with emphasis on diagnosis and treatment, some reference being made to the pathologic process and its correlation with the clinical features. The method of treatment outlined, that of stretching and manipulation with a proper apparatus, has been of value in doubtful cases as a diagnostic test.

PATHOLOGY

The intervertebral foramina, through which spinal nerve roots emerge, are completely surrounded by bony structures. Surrounding the nerve root within the foramen are cellular tissues, lymphatics, arteries and veins. Consequently a congestive process, a periostitis and inflammation or an osteophyte within this bony passage may cause root symptoms.

Because of the dearth of autopsy material in cases such as these presented here, Nathan¹ induced nonsuppurative arthritis in animals and searched for evidences of spinal involvement. In six cases he found spinal arthritis, and the pathologic changes he observed were as follows:

- 1 Epidural exudate infiltrating the epidural areolar spaces

- 2 Involvement of costovertebral joints with thickening of connective tissue in the neighborhood

- 3 Thickening of the periosteum of the vertebrae

He concluded that the vertebral changes in acute spondylitis (assuming that the pathologic changes are analogous to those found experimentally in the dog) consist of endothelial and subperiosteal inflammation leading to epidural and perispinal exudation, with resulting root irritation and compression.

CLINICAL AND PATHOLOGIC CORRELATION

The clinical features of arthritis of the cervical spine are these. Rigidity is present and its extent varies

with the degree of muscular spasm, the extent of ligamentous ossification and the presence of osteophytes or hypertrophic changes. In the acute or infectious variety the rigidity is due to muscular spasm. In more advanced cases, ligamentous ossification is the cause. In far advanced cases, the osteo-arthritis or hypertrophic variety, the rigidity is due to osteophytes growing at the margins of the vertebral bodies and on spinous and transverse processes.

Another clinical feature is pain. It may be local pain due to the strain to which the inflamed parts are subjected while the spine is called on to maintain correct erect posture without support. On the other hand, the pain may be referred along the sensory nerves of the limbs or trunk. This pain may be due to pressure on the posterior nerve roots as they emerge from the spinal cord through their bony outlet. This pressure may be due to one or more causes. In the infectious variety the roots as they emerge may be involved by adhesions or pressed on by inflamed ligaments and capsules. In the hypertrophic variety, reference of pain may be due to the pressure of osteophytes with their associated soft tissue inflammation and synovial thickening.

Symptoms may vary, depending on the degree of mechanical interference with the roots as they emerge from the cord. If the interference is slight there may be paresthesias and numbness as the only symptoms. Pain of a more severe sort along any of the sensory or segmental nerves is the inevitable sequence of a more definite impingement. The distribution of pain and sensory disturbances varies with the particular nerve root or roots involved. The mechanism of reference of pain to the precordial areas as a result of irritation of cervical roots has been suggested by Nachlas.² The medial anterior thoracic nerves originate in the eighth cervical and first thoracic spinal segments. The lateral anterior thoracic nerve originates in the sixth and seventh cervical segments. These innervate the pectoralis major and pectoralis minor muscles. These are motor nerves and do not carry any skin sensory fibers. These nerves, however, can possess protopathic sensations so that an irritation of them may produce a diffuse yet definite pain referred to the terminal portion of the nerve. There may even be muscle incoordination, loss of position sense, or even absence of reflexes and paralyses of the flaccid variety if the anterior roots of the spinal nerves are sufficiently involved.

FREQUENCY

The syndrome of cervical arthritis, more often the hypertrophic variety, associated with referred pain to the shoulder and arm, and more rarely to the precordium in a pseudo-angina fashion, is common. In the past three years approximately thirty cases have come to my attention. In these the diagnosis was made and confirmed and treatment was successfully instituted.

CASE HISTORIES

Of this series, five cases are presented in all of which pain in the shoulder and arm due to cervical arthritis was present. A sixth case will be mentioned briefly as a case of anginal-like pain, believed to be due to cervical arthritis. In none of these cases was there any evidence clinically and by roentgen examination of pathologic changes in the shoulder joint. In all these cases, either clinically or by roentgen examination a diagnosis of arthritis of the cervical spine was made. All were

From the orthopedic service of the Beth Israel Hospital, Boston, and the orthopedic service of the Cambridge Hospital, Cambridge, Mass.
¹ Nathan, W. P. The Neurological Condition Associated with Polyarthritides and Spondylitis. *Am. J. M. Sc.* 152: 667 (Nov.) 1916.

² Nachlas, J. W. Pseudo-Angina Pectoris Originating in the Cervical Spine. *J. A. M. A.* 103: 323 (Aug. 4) 1934.

relieved by the treatment suggested by the cases herein presented, with the aid of the apparatus shown in figures 2 and 3

CASE 1—E S, a man, aged 43, a merchant, complained of a constant "agonizing pain" along the posterior aspect of the right shoulder, which had been present for about six weeks. This pain radiated up along the right lateral aspect of the neck and down into the fourth and fifth fingers. It had been suffi-

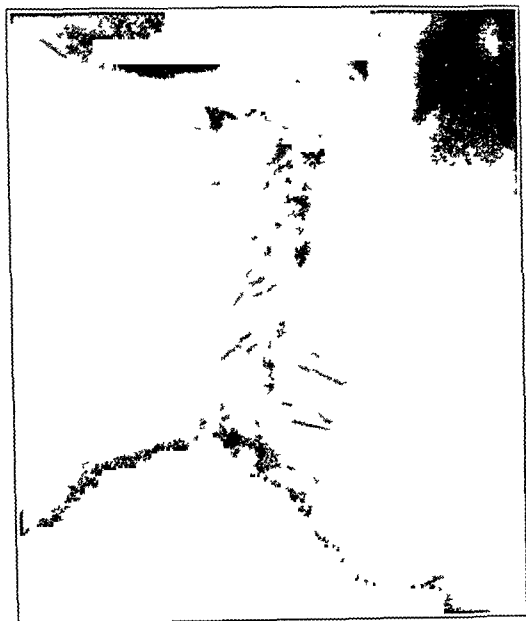


Fig 1—Hypertrophic arthritis of cervical spine

ciently severe to interfere with his sleep. He had noticed for even a longer time numbness of the right hand and weakness of the right grip. A diagnosis of subdeltoid bursitis was made by his family physician and baking and massage and salicylates were prescribed without relief.

Examination of the right shoulder joint was negative. The cervical spine showed limitation of motion to a slight degree in all directions particularly in rotation. When an attempt was made to stretch the neck in rotation to the right beyond the limit he was actively capable of the pain in his shoulder was acutely accentuated. Examination also revealed marked atrophy of the extensor muscles of the right upper arm and weakness of the right wrist extensors. The reflexes of the right arm were diminished. The right hand grip as compared to the left was definitely impaired. Roentgen examination revealed marked spurring involving the anterior and lateral borders of the fourth, fifth, sixth and seventh cervical vertebrae with practically complete bridging of the spaces between the fifth and sixth vertebrae. A roentgenogram of the right shoulder was negative (fig 1).

He was admitted to the Beth Israel Hospital and the morning after admission treatment was begun as follows. One-half hour before the patient was taken to the stretching and suspension apparatus 3 grams (0.2 Gm.) of sodium amytal was given. He was seated in a chair under the Savre head traction apparatus and traction was applied in a manner suggested in figures 2 and 3. Traction was continued until the buttocks swung freely just above the seat of the chair. While suspended in this position the patient indicated the desire to be lowered by snapping his fingers, since the apparatus made it impossible for him to speak. When the apparatus was released he stated that while he was suspended, the pain which had been present constantly for six weeks disappeared completely. He also volunteered the information that as he was lowered and as traction was discontinued the pain returned. Treatment was carried out again for several short periods of one or two minutes and during these suspensions with a nurse steadying the shoulders the head was passively rotated to the left and to the right just beyond the limits of active rotation. A

Thomas collar was made and applied, and he was returned to his room, where hot fomentations were applied to the neck.

This procedure was carried out three times on the first day. It was not necessary to repeat the use of amytal. It was performed twice on the second day, and on the third day he was discharged from the hospital with instructions to remove his collar for short periods of hot fomentations to be followed by active neck exercises in flexion, extension and rotation. He was stretched occasionally at home and at the end of eleven days the only pain persisting was a very slight one over the back of the right shoulder. At this visit there was slight numbness of the little finger. A month later all the pain had disappeared and the right grip as well as the extensors of the right elbow and wrists had improved. Three months after treatment was begun he was completely well and has continued so to date, two years later.

CASE 2—W H, a business man aged 45, complained of severe pain of three weeks' duration along the right side of the neck. The onset was gradual and there was no injury associated with it. The pain radiated to the superior aspect of the right shoulder and into the lateral aspect of the right upper arm. Questioning revealed similar attacks of moderate intensity extending back over a period of several years. The most recent attack had been unrelieved by bakings to the shoulder administered by a physician who made the diagnosis of bursitis of the shoulder.

Examination of the right shoulder showed no evidence of any active disease. The neck, however, showed limitation of motion to a slight degree in all directions. Pain in the shoulder was accentuated by forcing forward flexion beyond the range he was actively capable of. Poentgen examination of the cervical spine showed slight hypertrophic changes.

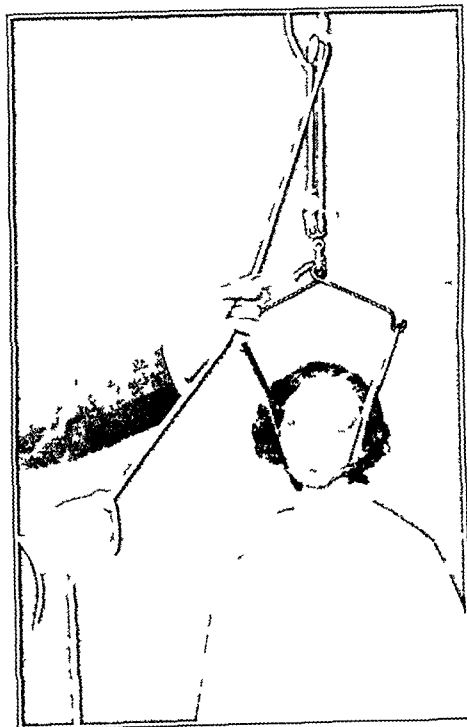


Fig 2—Suspension of patient with overhead block and tackle and Savre head ring

The same treatment as in case 1 was carried out at the Beth Israel Hospital. Here again in the suspended position the pain disappeared, only to reappear when the patient was lowered. After two weeks of treatment he was completely well.

CASE 3—J S, a man, aged 55, a druggist, the brother of patient 1, complained of acute pain along the lateral aspect of the right side of the neck radiating into the right upper arm. It had been present more than a week and was constant and unendurable.

Examination of the shoulder joint was negative, as was also a roentgen examination. Motions of the neck were markedly limited in all directions. Forced extension beyond his active extension accentuated his pain. Roentgen examination of the cervical spine showed extensive hypertrophic changes so identical with the changes revealed in his brother's roentgenogram, even to the bridging of the spurs, that the two could be interchanged and confused readily.

He was admitted to the Beth Israel Hospital and treatment was instituted. Within three weeks the pain was entirely gone. Six months later he had a mild recurrence of this pain, which responded effectively and promptly to exercises and hot applications.

CASE 4—M. D., a man aged 60, complained of pain along the dorsum of the cervical spine and over the back of the left shoulder. This pain had been constant for nine weeks during which time several physicians had treated him without success. His teeth were extracted without relief. Following this he was advised to have his tonsils removed but the consultant to whom he was referred for this procedure did not consider it necessary and suggested an orthopedic consultation.

Examination of the left shoulder was negative. The neck showed limitation of motion in all directions with pain referred on forced rotation to the left to the posterior aspect of the left shoulder. Roentgen examination of the cervical spine showed extensive liping and hypertrophic changes with a good deal of bridging of spurs.

He was admitted to the Beth Israel Hospital for treatment. In ten days he was free from pain. He was advised to continue with exercises at home. He was stretched once a month for three months. He has been well to date, one year after treatment ceased.

CASE 5—L. L., a furniture dealer aged 55, complained of pain in the right shoulder of one week's duration. It was root-like and lancinating unrelated to any initial trauma or to motions of the shoulder joint. Two months before the onset of pain he had consulted a cardiologist for precordial distress present on repeated occasions with exertion. For this condition he was advised to diminish his activities. Small doses of glyceryl trinitrate were prescribed for this distress.

Examination of the right shoulder joint was negative but for a rather severe second degree burn over the superior and anterior aspect of the shoulder joint the result of a too vigorous attempt to allay the pain with hot fomentations. Roentgen examination of the neck revealed no evidence of hypertrophic arthritis of the cervical spine. Objectively however the neck showed slight limitation of motion in all directions, and forcing his neck in lateral flexion to the left accentuated the pain.

He was admitted to the Beth Israel Hospital and before treatment was instituted he was thoroughly examined by an internist who shared my opinion that the present pain was in no way related to angina pectoris and questioned the existence of coronary disease. Treatment was carried out and in four days the patient was discharged with marked improvement. Three weeks afterward the pain had subsided and only numbness over the superior aspect of the right shoulder remained. This lasted for about a month. He has had no precordial distress since the treatment. Whether or not this is due to his care not to overexert or whether the anginal pains were possibly due to the cervical arthritis is recently described by Nachlas cannot as yet be definitely established.

Case 6 is being presented briefly, as it is to be reported more fully elsewhere by others primarily interested in cardiology.

CASE 6—H. T., a man aged 50 presented himself at the outpatient department of the Beth Israel Hospital in December 1933 complaining of pain beginning to the left of the sternum radiating into the lateral left side of the neck and down his left arm. It was associated with a constant pain and tightness of the back of the neck. He had been seen previously and elsewhere by a cardiologist who made a diagnosis of angina pectoris prescribed glyceryl trinitrate and shortly thereafter suggested a total thyroidectomy for the relief of the pain. The patient refused to undergo this operation. He was studied at the various clinics of the Beth Israel outpatient department.

The repeated heart examinations both clinical and laboratory were negative. The positive observations were as follows: hypertrophic arthritis of the cervical spine and left shoulder, generalized arteriosclerosis and a moderately increased total protein in the spinal fluid on two occasions. This increased total protein was the only positive neurologic manifestation. A diagnosis of radiculitis with associated precordial pain as suggested by Nachlas, was considered by the neurologic service. The possibility of a cord tumor was also considered.

I suggested that treatment as outlined in this paper might be used as a therapeutic test. Two days after it was begun the precordial pain disappeared, along with a good deal of the neck pain. A few days later the precordial pain recurred but was considerably diminished. It was immediately controlled by additional treatment and two or three days thereafter the pain had entirely gone. The patient has discontinued all medication and is most anxious to receive additional stretchings. His only complaint at present is pain in the left arm and shoulder which is believed to be due to a grossly objective arthritic left shoulder. He has been followed now for seven weeks to date (Oct 15, 1934) without any recurrence of the precordial pain.

DIAGNOSIS

The diagnosis is suggested by the presence of pain, root-like in character, in the shoulder, arm or precordium unassociated with sufficient evidence of local disease in the shoulder to account for it satisfactorily. Sensory disturbances and even definite flaccid paralysis with loss of reflexes may be present. There is usually some pain either along the side of the neck or back of the neck, which either may be the starting point for the pain in the arm, shoulder or chest or may exist independently. Examination of the neck usually reveals limitation of motion, to a less or greater degree, in one of its arcs. Passively stretching the neck in all directions beyond the range of which the patient is actually capable will usually disclose the direction in which the pain is accentuated.



Fig. 5.—Rotation of patient's head while suspended with shoulders held fixed.

The roentgenogram may or may not show evidences of hypertrophic arthritis, depending on the extent, duration and type of disease. The condition must be differentiated from (1) cervical rib, (2) subacromial bursitis, (3) arthritis of the shoulder, (4) toxic and infectious neuritis, (5) muscle sprain, and (6) lesions of the spinal cord.

TREATMENT

The treatment of this disorder, although essentially constant, may vary in its sequence and duration with the activity and acuteness of the arthritic changes. If the arthritis responsible for the pain is of the acute variety it is desirable to splint the neck either with a Thomas collar or with constant head traction using a Sayres sling.

If the arthritis is subacute or chronic, and this is the usual type, stretching and manipulations are indicated in the manner hereafter described. An overhead hook into which can be attached a block and tackle Sayres

sling suspension apparatus is needed. The patient is seated on a chair under the apparatus. If the patient is apprehensive, it may have been advisable to prescribe a sedative. The Sayres sling, well padded at the chin piece and occiput piece, is applied. Traction is applied as in figure 2 and is continued until the patient's buttocks swing freely, when rocked, just above the seat of the chair. While the patient is suspended in the air, the shoulders are held by an assistant, and the head and Sayres sling are rotated (fig. 3) to the left and right, forcibly. This procedure is repeated several times. The patient is then lowered and rested for a moment or two, and then the entire procedure is carried out again.

A Thomas collar is made and applied, to be removed only for the hot fomentations to the neck that follow each treatment.

It has been customary to carry out this treatment three times the first two days, twice a day thereafter and then spaced out as seems advisable. The number of treatments varies tremendously and is determined by the progress of the disorder. Similarly the period of wearing the Thomas collar varies. In certain cases it may be dispensed with.

As soon as the pain begins to go, active graded exercises in rotation, flexion and extension are advised. The patient is advised to return at stated long intervals for inspection, at which time occasional neck stretchings and manipulations are advised if any recurrence of pain or increase in limitation of motion is observed.

This treatment can be used as a diagnostic test because in most cases in two or three days there is beginning relief of pain. It is effective as a treatment probably because it mobilizes adhesions, breaks up bridging of fine calcifications, and relieves muscle spasm, thereby contributing to a better carriage of the cervical spine.

COMMENT

The occurrence of an increased total protein in the spinal fluid in case 6 suggests the possibility of such a finding in radiculitis of this type, consistent with the observation that the cerebral spinal fluid circulates around the nerve roots as they lie in the intervertebral foramina. It is not unreasonable to assume that the cerebral spinal fluid may be modified by the radiculitis as the result of pressure and the associated congestive and inflammatory changes of spondylitis of the spine. Lumbar puncture will be done in additional cases when possible, with a view to establishing or disproving this premise.

I have used this treatment as a therapeutic test in several instances to differentiate between this condition and others in which the objective signs were confusing. Its possibility as a therapeutic test in the differentiation of pseudo-angina due to cervical arthritis and true angina has been suggested.

These cases are frequent and they represent in all probability a substantial proportion of the patients who migrate to chiropractors and others after they have been bled at length for arthritis of the shoulder or bursitis of the shoulder. Some of the commonly called neuritis in elderly people is probably on this basis.

The recognition of these borderline cases which lie between the confines of neurology and orthopedic surgery is most important if one is to prevent a substantial migration of patients to the cults beyond the realm of medicine.

PERSISTENT URACHUS IN THE ADULT

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Umbilical fistulas derived from remnants of the urachus are rare, particularly in adults. Four cases of pathologic conditions originating in the urachus, seen at the U. S. Marine Hospital, Staten Island, during the past five years are reported. One was a malignant growth, the other three cases were chronic fistulas.

At birth the urachus reaches to the umbilicus. Normally, after birth the bladder descends, taking the urachus with it, leaving only a fibrous tissue cord. In the normal adult the urachus measures from 3 to 10 cm. in length and reaches only one third the distance from the apex of the bladder to the umbilicus, being attached at the umbilicus only by fibrous cords from the obliterated umbilical arteries.

In a small percentage of cases, however, such descent of the urachus does not occur, and there remains a more or less obliterated epithelial structure reaching from the umbilicus to the bladder. That this is a rare condition is evidenced by the report that of 15,000 cases admitted to the Brady Urological Institute only three were found to present this condition. Of 5,840 cases seen at this hospital during the past five years, three have presented this condition and were diagnosed not by cystoscopic examination but by examination of an umbilical fistula and the diagnosis was confirmed by

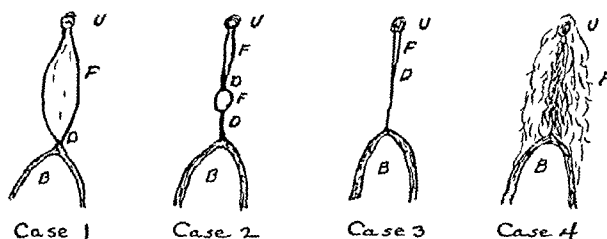


Fig. 1.—Drawings of the four cases. U, umbilicus; B, bladder; F, fistula or cyst of urachus; D, obliterated lumen of urachus.

operation. The fourth case was diagnosed by an exploratory operation for a tumor extending from the umbilicus to the pubis, which was found to be a malignant growth with metastases extending down over the bladder and invading the adherent omentum.

The normal urachus is attached to the apex of the bladder. It may communicate with the bladder or it may reach only to the bladder mucosa. The urachus is separated from the peritoneal cavity only by the parietal peritoneum. The lumen of the normal urachal canal is approximately 1 mm. in diameter and is lined by epithelial cells. While the canal presents an unbroken continuity of epithelial cells, the lumen may be obstructed by its own desquamated epithelium. The obstruction offered by the proliferated and shed epithelial cells and debris accounts for the rarity with which urine is found to pass upward from the bladder. Surrounding the epithelial lining of the normal urachus is a dense, connective tissue layer. The epithelial cells tend to proliferate outward into this connective tissue support.

On those rare occasions in which the urachus does not descend with the bladder a lumen may be intact, reaching from the bladder to the umbilicus and discharging urine at the umbilicus. In other cases the

lumen may be patent only to the midportion with no drainage present, unless as the result of injury or secondary infection, the contents of the infected cyst find their way upward to be discharged at the umbilicus, or downward into the bladder, with a resulting secondary cystitis. In other cases the lumen appears to open at the umbilicus and to extend downward, for a distance of from 5 to 10 cm, apparently ending blindly.

In none of the cases reported here was there a lumen connecting with the bladder. In case 1 the inflammatory swelling extended to the mucosa of the bladder but not into it. In case 2 the lumen was present, extending from the umbilicus downward 5 cm, ending blindly, while 2 cm below there was a cyst filled with a straw-colored transparent fluid, 3 cm in diameter. From this cyst a cord extended downward to the apex of the bladder. In case 3 the fistula extended from the umbilicus downward approximately 5 cm, ending blindly. In case 4, in which the malignant growth was present, the tumor mass extended from the umbilicus and involved the bladder. It was difficult to determine the extent of the urachus as the tumor had extended downward along the wall of the bladder, although it had not penetrated the mucosa.

Infection in a persistent undescended urachus makes its presence more evident. The history in these three benign cases is similar. The chief complaint was an intermittent discharge from the umbilicus. There was a slight more or less constant secretion present, which periodically became purulent and was associated at such times by slight pain and redness about the umbilicus. When the infection subsided the discharge again became a thin, watery secretion which kept the umbilicus damp, but only occasionally was it sufficient in amount to soil the clothes. One patient complained

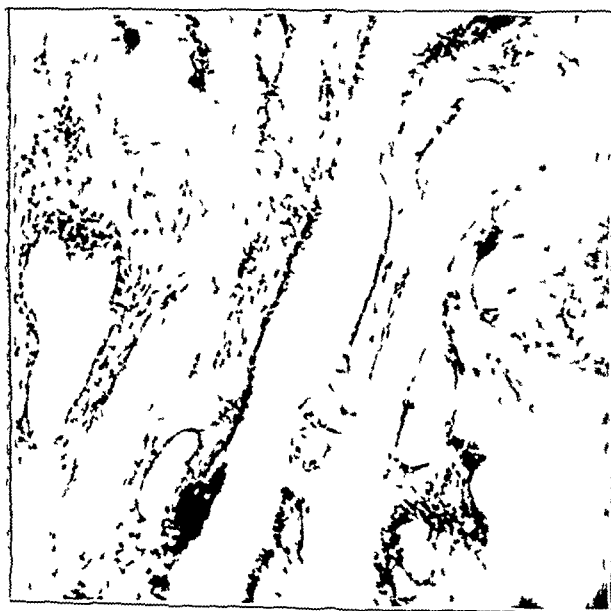


Fig 2 (case 2)—Tract leading to umbilicus from persistent urachus

of a foul odor which was quite noticeable. The odor was similar to that experienced in cutting into certain sebaceous cysts. The symptoms and course were almost identical with those of the common pilonidal cysts. In pilonidal cyst the epithelium has remained buried and symptomless as a rule until adult age. For some reason, owing to increase in the secretion or as a result of

secondary infection, the patient is conscious of a tender swollen area or a draining sinus. This periodically drains a purulent material as secondary infection flares up. Such is also the history and course of symptom-producing urachal remnants.

The treatment is excision of the infected tract and remnants of the urachus. If there is an opening at the

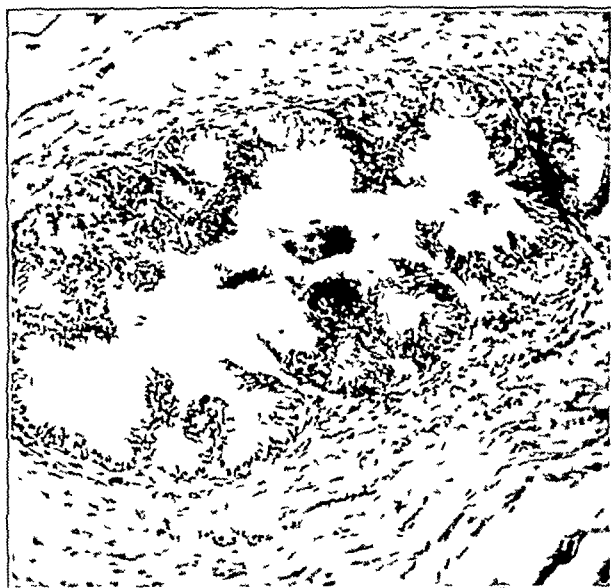


Fig 3 (case 2)—Persistent urachus. The structure is lined by stratified transitional epithelium similar to that of the urinary bladder. It is surrounded by fibrous tissue.

umbilicus, the sinus may be injected with methylene blue, which may aid in removing the entire epithelial structure. The sinus, if present, is then closed by suture and gauze packing to prevent soiling of the abdominal wound. An incision is then made about the umbilicus, extending downward near the midline toward the pubis.

The peritoneum may be found adherent owing to the infection, and in two of the cases the omentum had plastered over the region from the umbilicus downward along the infected tract. The presence of the adherent omentum makes the possibility of a Meckel's diverticulum more difficult to rule out, so one must proceed with caution. Theoretically, a simple extraperitoneal excision of the sinus tract is possible. Practically, such a tract is densely adherent to the peritoneum, and the peritoneum must be removed with it for the extension of the cyst. Even with care it is difficult to remain outside the infected area, as it is necessary to preserve as much peritoneum as possible if satisfactory closure is to be made. By opening the peritoneal cavity contamination may occur, and difficulty is often experienced in closing the peritoneum without undue tension. In one case closure was made with difficulty, and then only by sutures that included the entire abdominal wall, except the skin. As in pilonidal cysts, incision into the infected cyst does not produce a cure but may be a necessary preliminary operation to establish drainage until the acute infection subsides to a minimum. After the acute infection has ceased, a safer excision of the entire tract may be accomplished. In these cases there was no evidence of urinary obstruction, nor a history of urinary infection. Nevertheless the entire urachus was removed and the protruding apex of the bladder closed with interrupted sutures.

REPORT OF CASES

CASE 1—A youth, aged 19, admitted to the hospital, Sept 24, 1933, complained of pain about the umbilicus and a discharge from the umbilicus. The condition was first noticed six weeks before. The first symptom noted was a small amount of pain about the umbilicus which three days later began to drain. At times the patient noticed considerable local pain extending

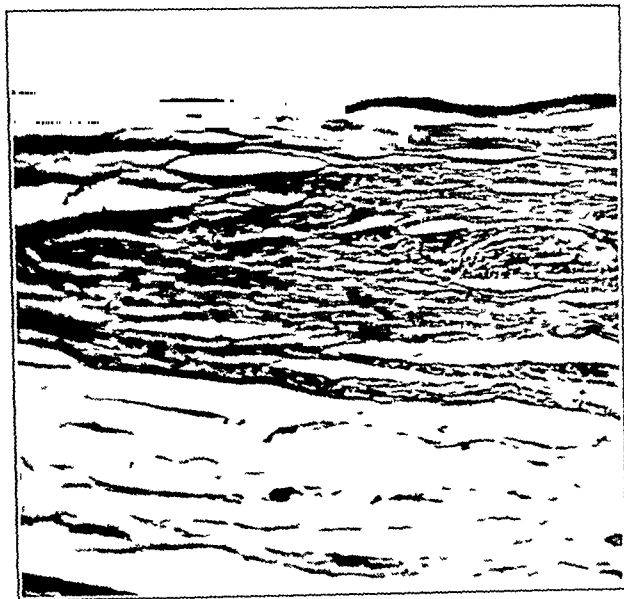


Fig. 4 (case 2)—Wall of cyst along the course of the urachus. The cyst is lined with simple low cuboidal epithelium and has a wall of hyaline lamellar connective tissue.

from the umbilicus downward and that there was swelling in that area. He had had no urinary symptoms. The urine was apparently normal on admission.

The temperature and pulse were normal and physical examination showed little of importance except the draining sinus from the umbilicus and a tender area along the midline extending downward toward the pubis. The sinus was injected with methylene blue. An incision was made about the umbilicus and extending downward at the midline toward the pubis.

A persistent urachus measuring 2 cm by 4 cm by 8 cm was found. It was slightly pear shaped with the smaller end toward the bladder. The tumor was attached to the fundus of the bladder but did not penetrate the mucosa. The peritoneum was firmly adherent to the tumor mass and was removed with it. The omentum was adherent along the course of the urachus. The urachus was removed and the opening in the fundus of the bladder closed. The abdominal wall was closed with difficulty owing to loss of peritoneum.

Sections¹ showed a small tubular structure 6 mm in diameter lined by columnar epithelium. A thin circular layer of smooth muscle was present about the epithelium. Outside this layer was loosely bound muscle and fibrous tissue. There were multiple sinus tracts lined by granulation tissue extending outward from the epithelial-lined urachus.

There was moderate drainage with elevation of temperature for nine days following operation. Recovery after that time was uneventful.

CASE 2—A man aged 27, was admitted to the hospital Dec 2, 1934 for excision of a persistent urachus. At the time of admission he stated that he had noticed a discharge from the umbilicus for the past month. The drainage at times had a noticeably foul odor. The discharge was thin and slightly yellowish. The amount, he thought, was gradually increasing.

Examination showed slight redness about the umbilicus. There was a small amount of foul smelling watery secretion from a sinus, which extended downward a distance of 1½ inches in the midline of the abdominal wall. The odor of the discharge resembled that noted in an occasional dermoid cyst.

The temperature and pulse on admission were normal. There were no urinary symptoms. The urine was normal.

The sinus was injected with methylene blue. An incision was made encircling the umbilicus and extending downward toward the pubis near the midline. The persistent urachus was removed. It was necessary to remove a small area of peritoneum adjoining the umbilicus. For the remainder of the excision the peritoneum was not incised.

Examination showed a tract lined with atrophied transitional epithelium similar to that of the urinary bladder. This epithelial tract was surrounded by fibrous tissue. The cyst was lined by cubicle epithelium with an outer wall of hyaline connective tissue. The microscopic diagnosis was urachal cyst with persistent urachus. Postoperatively there was an elevation of temperature for seven days, with moderate drainage from the wound. Recovery was otherwise uneventful.

CASE 3—A man aged 38, examined Jan 24, 1935, stated that about two years previously he had first noticed a slight watery discharge from the umbilicus. The discharge had persisted most of the time during the past two years. At intervals there was redness about the umbilicus and the discharge became thicker. Usually the amount of secretion was just sufficient to keep the umbilicus damp and seldom soiled his clothes except at those intervals when the discharge became more purulent and it was necessary to wear a dressing over the umbilicus to prevent soiling.

Examination showed a rather deeply placed umbilicus and at the inferior margin there was a small sinus. A probe was passed without difficulty directly downward in the midline for a distance of 4 cm. There was a thin, watery discharge from the sinus.

Operation was advised, but the patient stated that he had recently obtained a new position and felt that he could not ask for leave to be operated on at that time.

CASE 4—A man, aged 31, admitted to the hospital Aug 28, 1930, complained chiefly of pain and difficulty in urination which had been noticed for a period of one month.



Fig. 5 (case 4)—Myxosarcoma arising in a persistent urachus. Sections show a new growth composed of large cells with vesicular nuclei and small nucleoli. Where close packed these cells show broad faintly staining cytoplasm and polygonal outline and numerous fine mucin and collagen fibrils run around and between the cells. Where the arrangement is loose the cells assume a stellate form and copious intracellular mucin. Mitotic figures are numerous.

Examination was essentially negative except for the abdomen. There was a palpable tumor mass extending from the umbilicus downward to the pubis. Cystoscopic examination showed compression of the fundus of the bladder apparently from an extravesical mass. The bladder mucosa appeared normal. The leukocyte count was 8600. The urine was normal.

¹ Microscopic sections furnished by the National Institute of Health, Washington, D. C. Photomicrographs made at the Venereal Disease Research Laboratory, U. S. Marine Hospital, Stapleton, S. I.

An exploratory incision was made. A tumor mass was found invading the abdominal wall and extending into the rectus abdominis muscles laterally from the umbilicus downward toward the pubis and then extending over the superior surface of the bladder into the pelvis. The adherent omentum was filled with tumor masses. There were metastatic growths scattered over the adjacent parietal peritoneum.

The tumor was inoperable. Microscopic sections showed the tumor to be a myxosarcoma. Roentgen therapy gave no apparent results.

The patient died from generalized sarcomatosis five months later.

SUMMARY

Of four cases of persistent undescended urachus in adults one was malignant. The three nonmalignant ones opened at the umbilicus.

While the normal urachus should descend with the bladder after birth, some do not descend and the secretion from the epithelial lining or secondary infection of the epithelial structure causes sufficient pressure to produce an opening at the umbilicus with resulting chronic fistula.

The age of the patient when first noted, the onset of symptoms, the progress of the condition and the treatment are nearly identical with the common pilonidal cyst, differing only in its embryologic structure and its different location.

Surgical removal of the sinus and epithelial structure in its entirety with the umbilicus and inversion of the bladder end is a proper method of treatment. Malignancy does occur in the persistent urachus.

FATAL HEMOGLOBINURIA WITH UREMIA FROM QUININE IN EARLY PREGNANCY

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AND

C. T. JAVERT, MD

BUFFALO

As it is not generally known to the physician that quinine when employed in early pregnancy, may produce hemoglobinemia with severe kidney damage we report a case of fatal quinine poisoning in a woman in the early stage of pregnancy with hemoglobinuria and uremia. The case also stresses the importance of a thorough pathologic and toxicologic examination in any instance in which the clinical observations are not fully explained by the laboratory data. The urea nitrogen retention in the blood of this patient was the highest ever recorded in our laboratories. This together with increasing oliguria, focused the clinical attention on the kidneys. Since mercury poisoning was ruled out by the analysis of the urine and a history of drug ingestion could not be obtained before the death of the patient it remained for the postmortem examination to determine the nature and etiology of the anticipated severe renal damage. Here the picture of so-called hemoglobinuric infarction of the kidney tubules suggested itself. Search of the foreign literature showed in rare instances that quinine was found as the only ascertainable cause of fatal hemoglobinuria. This case is to our knowledge the first in which part of the drug taken could be recovered by chemical analysis of the liver. It is apparently the first report in the American literature of fatal hemoglobinuric kidney damage due to quinine.

History.—A woman aged 41 of Polish descent admitted Sept. 12, 1934 in the service of Drs. Greene and Bowen had had three previous normal pregnancies. Her chief complaints were persistent emesis, anorexia, extreme prostration and vaginal bleeding supposedly of several weeks' duration. Further history was refused because of extenuating circumstances and the following information was obtained from the immediate family after the death of the patient. A pregnancy of approximately three months duration had been interrupted by a lay abortionist who had given the patient the following drugs: Liquor Sedins (a proprietary remedy containing black haw, golden seal and Jamaica dogwood) twenty 5 grain (0.3 Gm.) tablets of quinine, six bile salt tablets and twenty-four black pills. The manner of ingestion and the dosage of the medications were not discovered as the patient would give no information concerning these facts. For the same reason the exact date of the onset of symptoms could not be determined. Medical attention was not sought until the patient's condition became rather critical and the family quite alarmed which was one day prior to hospitalization. However several of the aforementioned black pills were obtained and analyzed.

Examination.—The patient was pale and obese with a temperature of 98.7° (rectal), pulse 82, and respiration rate 20. The conjunctivae were anemic, there were brown crusts on the tongue and colostrum was expressed from both breasts. There were no cardiac bruits demonstrable, the blood pressure was 110 systolic, 66 diastolic and the abdomen was soft. Pelvic examination revealed the presence of slight vaginal bleeding, an open cervical canal and a slightly enlarged uterus. Pitting edema of the ankles was present and also a maculopapular eruption on the back and the buttocks.

The urine was first reported to be clear, with a specific gravity of 1.015, a 2 plus albumin, and no sugar. The red cell count was 1,830,000 per cubic millimeter with a hemoglobin of 36 per cent (Newcomer). The white cell count was 19,800 with 96 per cent of polymorphonuclear neutrophils. The Wassermann reaction was negative.

Chemical analysis of the blood revealed urea nitrogen 344, dextrose 262, chlorides 479, calcium 6.6, phosphorus 20.4, cholesterol 221, creatinine 16.2 and uric acid 20.9, all expressed in milligrams per hundred cubic centimeters. The blood serum contained 34 per cent of albumin and 17 per cent of globulin. The plasma carbon dioxide capacity was 15 volumes per cent. The van den Bergh reaction was 0.6 unit. Several urine samples were negative for mercury bichloride.

Treatment and Course.—Despite a daily injection of from 3,000 to 4,000 cc of saline solution containing 5 per cent dextrose, distinct oliguria was present, only from 300 to 400 cc of urine was excreted in twenty-four hours. A blood transfusion of 450 cc was given. During the final days of life the urine became loaded with red blood cells. The patient became increasingly lethargic, comatose and dyspneic, vomited at intervals and had a pulse of very poor quality. The temperature even immediately prior to death remained constantly subnormal (97° F., rectal), the pulse rate at its highest was 110, and the respiration rate 28. She died six days after admission.

Necropsy.—This was performed five hours after death. The pathologic diagnosis with only the salient changes mentioned was Hemoglobinuric infarcts of both kidneys, diffuse glomerulonephritis(?). Distinct uremic gastritis and enterocolitis with strong ammoniacal odor. Edema of the liver with slight brownish discoloration (hemosiderosis). Contracted bladder containing very little bloody urine. Very distinct anemia of the entire integument with a marked peculiar grayish hue. Purpuric rash on the back and sacral region. Fluid dark red blood in the heart and in all large veins. Distinct edema of all the mediastinal tissues, marked edema of the gallbladder. Petechial hemorrhages in the epicardium, the gastrointestinal mucosa and brain. Necrotic placental remnants in the uterus without signs of an endometritis. Recent lobular pneumonia. Normal lipid content in the adrenals.

Macroscopic Examination of Kidneys.—The kidneys were markedly enlarged, each measuring 14.6 by 7 by 4 cm. One weighed 260 Gm. and the other 255 Gm. The capsule was markedly distended but stripped easily. The surface of the cortex showed a peculiar discoloration. It was grayish brown with a black hue somewhat resembling the color of chocolate. There were innumerable dark bluish black spots scattered over

From the Pathology Laboratory of the Buffalo General Hospital and the Department of Pathology, University of Buffalo School of Medicine.

the cortex. These were interspersed with grayish white areas resulting in a mottled appearance. On section the parenchyma was very moist. The cortical substance appeared distinctly swollen, varying in width from 0.8 to 1.4 cm. There were innumerable bluish brown streaks especially prominent in the renal pyramids. The entire picture resembled that of so termed hemoglobinuric infarcts (fig 1).

Microscopic Examination of Kidneys—The most conspicuous changes were hemoglobin masses forming fine granular detritus

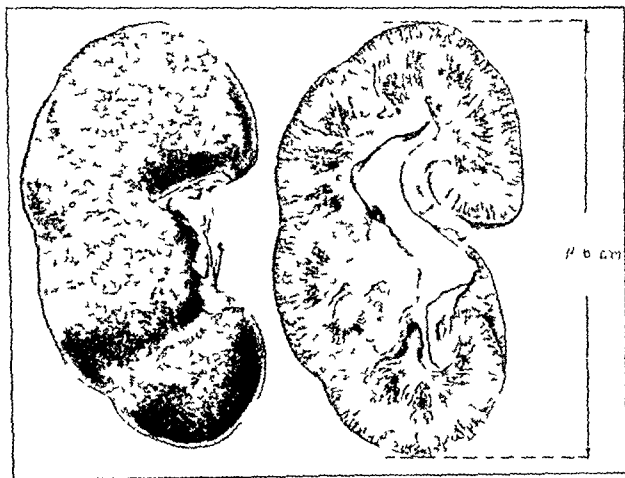


Fig 1—Gross appearance of the kidney on surface and cross section

in the lumen of many convoluted tubules, in the loops of Henle and in the distal convolutions. In addition, most of the collecting tubules contained huge conglomerate hemoglobin globules, and many desquamated epithelial cells with preserved nuclei, which were completely imbibed with hemoglobin. There was marked distention of practically all the convoluted tubules and the loops of Henle. Some of Bowman's capsules also showed dilatation, although but little dissolved hemoglobin was detectable, together with desquamated epithelial cells and some leukocytes. However the hemoglobin casts and masses that were so conspicuous in the convoluted and collecting tubules were not seen in Bowman's capsules. The epithelial damage in the proximal convoluted tubules was most severe. They exhibited necrobiotic changes and complete necrosis. In certain areas the epithelial lining appeared collapsed almost to a very thin membrane. Many nuclei were missing and the cell membranes were not preserved. The brush border was hardly visible. The collecting tubules, however, were much less distended. It was obviously difficult therefore, to identify the different portions of the tubular system because of the severe degenerative lesions and the extreme distention of the lumens.

In addition to the unusually marked hemoglobinuria with the degenerative lesions in the epithelial cells there were also rather marked inflammatory lesions as evidenced by leukocytic and plasma-cellular infiltrates not only around the collecting tubules overloaded with hemoglobin but also around several glomeruli and proximal convoluted tubules. This infiltration had, especially in the cortex, a more focal distribution. Finally, there were many leukocytes and necrotic cells intermingled with hemoglobin in the lumen of a fair number of loops of Henle and some of the collecting tubules. Only a few glomeruli appeared rich in cells and their capillaries contained many leukocytes. Iron stain (Turnbull method) showed distinct hemosiderin granules in the epithelial cells of some convoluted tubules and loops of Henle, but only a few of these pigmented cells were visible within the hemoglobin casts in the collecting tubules. Otherwise the iron reaction in the fine granular and globular hemoglobin masses and casts was entirely negative. It was of special interest to note that the erythrocytes within the capillaries of the glomeruli as well as in the stroma between the tubules and in the medulla were for the most part well outlined. Only occasionally were shadows of the erythrocytes seen, and some of them showed only a faint color, which suggested that the hemoglobin content was markedly reduced.

Other Microscopic Changes—Smears of the urine sediment from the bladder showed huge hemoglobin masses and prac-

tically no preserved erythrocytes, together with a large number of leukocytes and epithelial cells. Spectroscopic examination suggested but did not conclusively prove the presence of methemoglobin.

Especially striking was the histologic picture of the liver which showed a most selective hemosiderosis of the Kupffer cells. There was no iron pigment demonstrable in the liver cells.

The reticulum cells of the splenic pulp also showed distinct hemosiderosis.

Chemical Analysis—Dr Edward J Powers, chemist in the Department of Health, Buffalo, made the analysis. Three grains (0.2 Gm) of quinine was recovered from the liver. A report of the analysis of two of the "black pills" that were obtained from the family was as follows: apio none, salin oil none, ergotin, none, ferrous carbonate, mass, and nuxvomica, about one-fifth grain (0.01 Gm).

COMMENT

The gross and histologic changes in the kidneys coupled with the ammoniacal odor of the gastrointestinal mucosa warrant a diagnosis of severe hemoglobinuric kidney damage with uremia. The clinical symptoms and laboratory results support this view. The recovery of 3 grains (0.2 Gm) of quinine from the liver is significant, since there was no drug taken during the last week of life while the patient was in the hospital.

Quinine is a drug in common use. Small doses may produce swelling of the face and hands, rash, giddiness and ringing in the ears. Following the ingestion of large amounts cinchonism may develop with nausea



Fig 2—Medulla of kidney under medium power showing hemoglobin masses in the lumen of the collecting tubules. Frozen section. Hematoxylin eosin stain.

emesis, diarrhea, cardiorespiratory depression, prostration and collapse. Some of the latter symptoms were manifested in the case here described.

The following quinine medication is suggested as of rare occurrence. This is

perhaps true of the ordinary case of cinchonism Mezger and Jesser² do not record its presence in two fatalities observed in infants, nor does Raven,³ who reports a death in a woman, aged 50, following an estimated dose of 200 grains (13 Gm) of quinine taken as a soporific.

However, according to Else Petri,⁴ who reviewed the literature on the toxicologic effect of quinine hemoglobinemia and hemoglobinuria do occur, but only under certain physical-chemical conditions of the blood. This has been observed occasionally in patients suffering from "blackwater fever" and in very rare instances in early pregnancy. The exact nature of the quinine hemolysis is not understood. Apparently a certain susceptibility to hemolysis must be present when quinine produces hemoglobinemia. Nocht and Kikuth⁶ have shown that very small quantities of quinine may facilitate the amoceptor hemolysis in animal experiments. Donath and Landsteiner⁷ assert that during pregnancy autohemolysins are formed by a gradual disintegration of a large number of red corpuscles. It is believed that women with eclamptic tendencies are especially susceptible to hemolysis.

Quinine does not exert a direct action on the kidneys. It is readily excreted by the gastro-intestinal tract and the kidneys very shortly after intake. When the hemoglobin, following hemolysis, reaches a sufficient concentration in the blood it is excreted by the kidneys, and hemoglobinuria is recognized. The kidney damage is due to the accumulation of hemoglobin in the tubules, with mechanical blocking of the urinary flow, increasing oliguria or complete anuria and uremia.

A review of the literature revealed a total of eight fatal cases bearing on the problem of our discussion. Seitz⁸ has reported three cases. A woman, aged 35 two months pregnant, was given three doses of 0.5 Gm of quinine every two hours. Within five hours the urine became dark red. Spectroscopic examination revealed oxyhemoglobin and methemoglobin. Marked anemia developed. The blood urea increased to 250 mg per hundred cubic centimeters. The patient died on the twelfth day. The cortex of the kidneys was a dirty grayish brown. A diagnosis of nephritis was made. His second patient, two months pregnant, showed excessive vomiting. She was given 1.5 Gm of quinine in an attempt to induce an abortion. Within two hours hemoglobinuria developed, followed by jaundice. Seitz believes this was due to a sudden hemolysis of red cells the resistance of which had been lowered by the pregnancy. No histologic changes of the kidneys were described. In the third case, 0.5 Gm of quinine was given in three doses to a woman three months pregnant and an abortion was produced. The patient voided black urine, which contained much hemoglobin but no red cells. Autopsy was not obtained.

Kutz and Traugott⁹ reported two cases. Their first patient was a woman, two months pregnant, in the state of abortion. She was given 0.4 Gm of quinine in two doses, nausea and cyanosis developed and she became

irrational. Much hematoporphyrin was found in the urine, which was a dirty black in appearance. Post-mortem observations were not conclusive. Thorough histologic examination of the kidneys was not reported. Their second case was similar to their first one.

Frommolt¹⁰ reported a case in which a criminal abortion had been performed and quinine injection, in unknown dosage, had been given. At autopsy the kidneys were a dark brownish red, and a diagnosis of hemorrhagic nephritis was made. The author reported a second similar case.

Petri⁴ described a case in which a woman of 26 had taken barbitol, and in addition 1 Gm of quinine each day for three days, at which time she died. Methemoglobinemia was noted clinically. Histologic examination of the kidneys showed hemoglobin masses in Bowman's capsules and in the lumens of the convoluted tubules. The tubules showed no epithelial damage.



Fig. 3—Kidney cortex under medium power showing granular and globular hemoglobin masses in convoluted tubules and loops of Henle. Capsules of Bowman are free. Note the focal interstitial inflammation in the upper left half of the picture. Paraffin section. Hematoxylin eosin stain.

The eight patients who died after the administration of quinine were all in the early stage of pregnancy. In each case there was hemoglobinuria. Necropsy in seven instances demonstrated a marked renal lesion, which was diagnosed grossly as nephritis or hemorrhagic nephritis. In Petri's case alone there is an adequate histologic description of the hemoglobinuria, accompanied by a drawing.

Our case differs from that of Petri in that certain inflammatory changes developed in the kidneys in addition to the very marked hemoglobinuric infarcts present in large parts of the tubular system. This can be explained by the fact that at least seven days elapsed in our case between ingestion of the drug and the time of death. This time element may account for the severe degenerative epithelial lesions in the convoluted tubules in our case which were not present in Petri's case.

2 Mezger O and Jesser H. Deutsche Ztschr f d ges gerichtl Med 10 75 (July 12) 1927.
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5 Zoeller C. Bull et mem soc med d hop de Paris 47 1422 (July 20) 1931.
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10 Frommolt. Zt chr f Geburtsh u Gynak. 101 454 1932.

SUMMARY

1 A woman, approximately three months pregnant, had taken quinine, estimated as 100 grains (6.5 Gm.), and hemoglobinuria and uremia developed. The blood urea nitrogen reached 344 mg per hundred cubic centimeters.

2 In the kidneys there was found marked distention of the tubular system, brought about by masses of hemoglobin (so-called hemoglobinuric kidney damage), associated with definite focal inflammatory lesions.

3 Three grains of quinine was recovered from the liver.

100 High Street

HEART BLOCK AND PREGNANCY

REPORT OF A SUCCESSFUL DELIVERY

MITCHELL BERNSTEIN, M.D.

PHILADELPHIA

The problem of pregnancy in a patient with heart disease is always one of serious concern. Paul D. White¹ states that "the important question concerning heart disease in pregnancy is the prognosis, one of the most difficult problems in medicine." Should the gestation be terminated or should there be no intervention in a cardiac patient? Is there any assurance that in the gravid cardiac patient, with good cardiac compensation, heart failure may not develop later because of the added burden of pregnancy? When the heart disease is due to complete heart block and pregnancy supervenes, as in the case here reported, what procedure should be followed?

It is interesting to note that a study of the literature up to Jan. 1, 1936 yielded only six² recorded cases of complete heart block in which successful gestation had occurred. Herrmann and King³ reported one of these six cases. Their patient had had complete auriculo-ventricular heart block since the age of 20 and had had six successful deliveries without complications. The valvular damage had been slight, with evidence only of mitral insufficiency. Her heart rate was never over 40 per minute. She experienced no trouble in her six parturitions. With this very meager number of six cases one naturally would be hesitant in making a definite decision in a patient with heart block and pregnancy.

HISTORY OF HEART BLOCK

Cecil⁴ states that Morgagni in 1761 recorded the first case of heart block (Oslei), while the Irish physicians Robert Adams in 1826 and William Stokes in 1846 published clinical accounts of the disease, later to be known as Adams-Stokes' syndrome. Gaskell in 1881 introduced the term "heart block," while in 1893 His discovered and described the narrow band of neuromuscular tissue between the auricle and the ventricle—the auriculoventricular bundle.

From the Departments of Medicine and Obstetrics, Jefferson Medical College Hospital.

¹ White P. D. Heart Disease ed 1 New York Macmillan Company 1931.

² Jeannin C. and Clerc A. Dissociation auriculo-ventriculaire et grossesse. Bull et mem Soc med d hop de Paris 51 122 127 (Feb 10) 1927. Clerc A. and Levy R. Evolution de la dissociation auriculo-ventriculaire chez les jeunes sujets. Bull et mem Soc med d hop de Paris 52 490 498 (March 22) 1928. Labry quoted by Archigene Titus R. S. and Stevens W. B. Normal Pregnancy in Patient with Pre-existing Complete Heart Block. Am J Obst & Gynec 22 775 777 (Nov.) 1931. Dressler W. Schwangerschaft und Herzblock. Wien Arch f inn Med 14 83 96 (March) 1927. Herrmann and King³.

³ Herrmann George and King E. L. Cardiovascular Disturbances in the Obstetric Patient. J A M A 95 1472 1476 (Nov. 15) 1930.

⁴ Cecil R. L. A Text Book of Medicine ed 3 Philadelphia W. B. Saunders Company 1933 pp 1097 1099.

SYMPTOMATOLOGY OF HEART BLOCK

Patients with complete heart block may be comparatively free from any subjective symptoms. On the other hand, symptoms may occur from time to time and vary from dyspnea, palpitation of the heart, fatigue and faintness to frequent attacks of severe vertigo, with marked slowing of the pulse from 25 to 30 per minute. Adams-Stokes' syndrome, i. e., syncope.

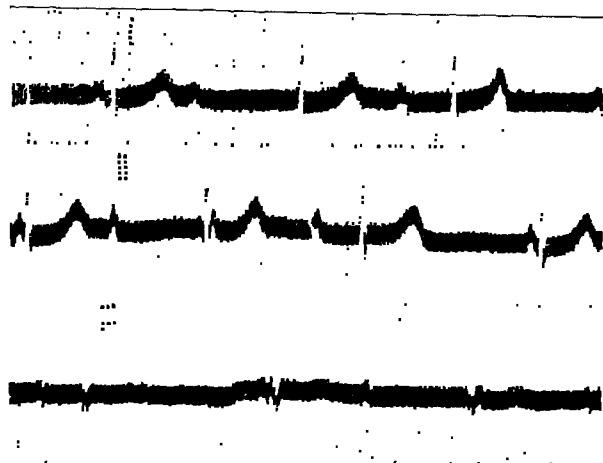


Fig. 1—An analysis of the curves showing a ventricular rate of 52 per minute with a slightly irregular rhythm. The auricular rate is 90 per minute, the rhythm being regular. Complete heart block is present and in addition left ventricular hypertrophy is indicated. Myocardial degeneration would be indicated by reason of the damage to the conduction system.

attacks with heart block, may supervene and add further to the gravity of the situation. In heart block when the ventricle stands still for more than ten seconds, the symptoms will be of a cerebral nature varying from giddiness to loss of consciousness. These symptoms disappear with the beating of the ventricle. Death

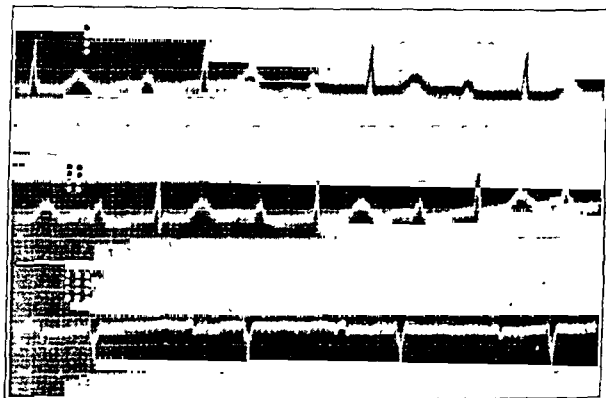


Fig. 2—Aug 5 1933 tracing taken immediately after delivery showing delayed conduction to 0.4 second.

however, may occur if the ventricular standstill is not interrupted after intervals of from ten to fifteen seconds.

PROGNOSIS OF HEART BLOCK

The existence of complete heart block usually implies severe and rather diffuse myocardial damage and hence grave disorder in the mechanics of the heart. Textbooks, in their descriptions of heart block, emphasize its peril and call attention to its not infrequent termination by sudden death. Mackenzie, cited by Cecil

⁵ Mackenzie James. Diseases of the Heart ed 4 London Oxford University Press 1925 p 260.

observed that the patient is often found dead in bed or elsewhere. Cecil⁶ remarks that patients with a mild form of heart block, even when the pulse rate is about 30, may lead quiet and uneventful lives for from ten to twenty years. Adams-Stokes' syndrome adds further to the peril. Sprague and White believe "the prognosis as regards life in the absence of marked demonstrable cardiac disease to be essentially good. The future, so far as the conduction defect is concerned, depends frequently upon an unknown factor and cannot be foreseen." In milder cases, no grave conditions arise from the delay or heart block itself.

Despite the usual grave prognosis of heart block, several authors have recorded cases of heart block of many years' duration in patients who have been relatively free from symptoms. Lewis⁷ states that heart block per se does not kill and that, although it is usually a sign of serious and often progressive myocardial damage, it may exist for some time, especially in young persons who are relatively and absolutely in good health. Smith⁸ reported a case of complete heart block of thirty years' duration with practically no difficulty or restricted activities. Ellis⁹ reported one case of heart block of twenty-four years' duration, two of nine years' duration, one of seven years' duration, all free from cardiac insufficiency. Willis¹⁰ reported a series of thirty-seven cases of complete heart block with an average duration of two and nine-tenths years, the longest duration being fifteen years. A case of intermittent heart block of twelve years' duration was reported by Russell-Wells and Wiltshire.¹⁰ White, through Ellis,⁹ reported two cases with complete heart block of fourteen and fifteen years' duration and yet free from cardiac symptoms. These two patients were quite well and led active lives.

Harris¹¹ reported a case in which heart block existed for twenty-eight years, and the patient had enjoyed good health during this time. In short, the prognosis in cases of heart block should be based on the condition of the myocardium together with a careful consideration of the etiologic factors involved. My patient evidenced no signs of cardiac failure despite the existence of heart block, a positive blood Wassermann reaction and a supervening pregnancy.

NATURE OF HEART BLOCK

Heart block, or auriculoventricular block, is a physiologic disturbance of the heart in which there is impairment of the conduction impulses from the auricles to the ventricles. The excitation wave in its spread from the time it leaves the sinus node until it reaches the auricular ventricular node of Tawara usually requires from 0.12 to 0.2 second, the latter being the upper limit of normal as recorded in the electrocardiogram. If the time interval is prolonged beyond 0.2 second the condition is known as "first degree heart block." Further involvement of the junctional tissue leads to second degree, or incomplete, heart block. Complete heart block exists when the electrocardiogram regularly shows ventricular complexes of slow rate,¹² which have no relation to the auricular activity. The ventricular

rate is usually low, about 40 or less per minute, but may rarely reach as high as 70, the auricular rate is usually higher than the ventricular, depending on the rate of the rhythm originating in the sinus node or on that of an auricular ectopic center, as in auricular tachycardia. The auricular rhythm may be completely irregular, as in auricular fibrillation, or rapid and regular as in auricular flutter.

CAUSES OF HEART BLOCK

Heart block may result in the course of acute inflammatory diseases, namely, diphtheria, influenza, rheumatic fever, endocarditis and nephritis. It may occur as a result of a chronic disease process involving the heart, such as syphilis. Vascular lesions such as arteriosclerosis involving the coronary arteries may lead to fibrotic, fatty and calcific¹³ changes of the nodes, the bundle of His, and the myocardium. Thrombosis or embolism of the coronary arteries with infarction of the interventricular septum may lead to complete heart block. Digitalis in toxic doses may produce complete heart block. Bacterial toxins in tetanus and in intestinal toxemias¹⁴ have been reported as causes. Heart block may also be of congenital, traumatic, senile or functional origin.

INCIDENCE OF HEART BLOCK

Sir James Mackenzie¹⁵ in 1925 wrote "Heart block is comparatively speaking a rare condition, but it is a subject of considerable importance in that it throws light upon vital processes which are present in every organ." He recorded observations in a series of patients with heart block and observed that "few people have the opportunity of seeing sufficient numbers of cases which illustrate all phases of the subject."

In the last fifteen years at the Massachusetts General Hospital,¹⁶ in an electrocardiographic series of 9,000 cases in which there were cardiac symptoms or signs, auriculoventricular block was diagnosed in 581 cases (6.5 per cent). It was complete in seventy-six, or 13 per cent, of these 581 cases and partial in 505 cases, or 87 per cent. However, no mention is made as to the percentage of males and females in this series.

In a series of 1,200 cases of all types of cardiac irregularities, Hamburger, cited by Cecil, noted that 9.6 per cent were due to all types of heart block. The types of block were: partial block, 3.1 per cent, bundle branch block, 2.8 per cent, delayed PR interval (first degree block), 2.5 per cent, and complete auriculoventricular block, 0.8 per cent.

In an electrocardiographic series of 3,000 cases reported by Lemann¹⁷ from the Touro Infirmary, there were thirty-eight cases of atrioventricular block, eleven of complete block, six of partial block, and twenty-one of delayed conduction time beyond 0.20 second. One of the complete blocks and one of the partial blocks occurred in patients aged 22 and 28 respectively.

Sprague and White¹⁸ reported eleven cases of high grade heart block with varying etiologic factors in patients under the age of 30.

Hence, in the total number of 13,211 cardiac patients studied electrocardiographically by the foregoing authors, there were 108 cases of complete heart block.

6. Lewis Thomas: *Clinical Disorders of the Heart Beat*, ed. 6, London: Shaw & Sons, 1925, p. 33.

7. Smith H. L.: *Am. Heart J.* 8: 719 (June) 1933.

8. Ellis L. B.: *Studies in Complete Heart Block. A Clinical Analysis of Forty Three Cases*. *Am. J. M. Sc.* 183: 225 (Feb.) 1932.

9. Willis F. A.: *A Clinical Study of Complete Heart Block*. *Ann. Clin. Med.* 3: 129 (Aug.) 1924.

10. Russell-Wells Sydney and Wiltshire H. W.: *A Case of Intermittent Heart Block Observed for Twelve Years*. *Lancet* 1: 984 (May 20) 1922.

11. Harris K. E.: *Notes on a Case of Complete Heart Block of Unusually Long Duration*. *Heart* 14: 289 (March) 1929.

12. *Criteria for the Classification and Diagnosis of Heart Disease*, ed. 3. New York: Tuberculosis and Health A. 1932, p. 110.

13. Yater W. M. and Cornell V. H.: *Heart Block Due to Calcareous Lesions of the Bundle of His*. *Ann. Int. Med.* 8: 777-789 (Jan.) 1935.

14. Taylor F. L.: *A Case of Transient Heart Block Due to Intestinal Toxemia*. *J. A. M. A.* 50: 1246 (April 18) 1908.

15. Mackenzie James: *Diagnosis of the Heart*, p. 230.

16. White P. D.: *Heart Disease*, p. 674.

17. Lemann J. I.: *Heart Block in the Young*. *Ann. Int. Med.* 7: 779-787 (Dec.) 1933.

18. Sprague H. B. and White P. D.: *High Grade Heart Block Under the Age of Thirty*. *M. Clin. North America* 10: 1235 (March) 1927.

It has been estimated by White¹⁶ that about 90 per cent of the higher grades of block occurred in patients over 50 years of age, because of the greater incidence of coronary disease. Obviously, then, the possibility of pregnancy would be limited to the remaining 10 per cent of patients in the child-bearing period. The very few reported cases of heart block and pregnancy may be explained by the fact that not all cases of pregnancy are studied electrocardiographically and that these patients are younger than those in whom heart block usually develops.

REPORT OF CASE

C B, a married woman, aged 23, of Spanish descent, admitted Nov 16, 1931, to the Jefferson Medical College Hospital Dispensary in the service of the late Dr Thomas McCrae, complained of precordial pain with radiation to the left shoulder and left arm. The symptoms had existed off and on for about one year prior to admission. There was no definite history of diphtheria, influenza or rheumatic fever.

The patient was married at the age of 17 years and had had many miscarriages. Her mother died of "Bright's disease" and an aunt died of heart disease.

Examination of the patient November 16, was essentially negative except for the cardiac condition. The heart was slightly enlarged to the left. A cardiac arrhythmia existed, together with a slow heart rate varying from 40 to 50 per minute. A soft systolic murmur was audible at the cardiac apex. The blood pressure was 120 mm of mercury systolic and 80 mm of mercury diastolic. At subsequent examinations the bradycardia persisted, although occasionally the cardiac rate appeared to be normal.

Throughout the period of observation over three years, the patient's blood pressure varied from 98 to 110 mm of mercury systolic and from 55 to 74 mm of mercury diastolic. Wassermann tests of the blood were reported as plus four on several occasions.

Electrocardiographic study of the patient Nov 27, 1931, made by Dr Ross V Patterson, showed a ventricular rate of 47 per minute, with a slight irregularity and an auricular rate of approximately 88 per minute and regular. Complete auriculoventricular dissociation was present. Repeated examinations of the patient were made in 1932 but no evidence of cardiac decompensation was detected. Clinically the patient seemed rather comfortable, evidencing precordial distress only on occasions. Dr Patterson later reported the following electrocardiographic observations: Jan 22, 1932 the ventricular rate was 55 per minute and the auricular rate was 68 with complete dissociation. Both the auricular and the ventricular rhythms were regular. February 26 the ventricular rate was 50 per minute and the auricular rate 75 per minute, and a complete heart block was present.

Roentgen examination by Dr John T Farrell, February 3 showed that the heart was normal in appearance and its transverse diameter was not increased. It measured 12.5 cm, while that of the chest was 25 cm. The diaphragm was smooth and regular in outline. Subsequently roentgen examination on November 15 showed a moderate enlargement of the heart, the right ventricle being particularly involved, its diameter indicating moderate enlargement. The left ventricle was also very slightly increased in diameter over the normal.

Feb 2, 1933, the patient reported that she was pregnant and believed that she was at the fourth month. At that time physical examination showed no evidence of cardiac decompensation, although the cardiac impulse was visible and palpable 10 cm to the left of the midsternum at the fifth left interspace. Frequent examinations up to May 9 showed no marked changes in the patient's cardiac condition.

Electrocardiographic study, May 12 1933 was reported as follows. The auricular rate was 70 per minute there was uneven spacing of the ventricular beats, the time of individual beats, if continued, varying from 50 to 75 per minute. Complete dissociation was present. Antisiphilitic treatment, which had been instituted when the patient was first observed, was continued without a pause.

Clinically the patient appeared quite comfortable and despite the advanced pregnancy there were no apparent signs of decompensation.

Moreover, the original precordial pain for which the patient was admitted to the dispensary service, Nov 16, 1931, had apparently disappeared or at least was conspicuous by its absence.

Aug 4, 1933, the patient began active labor, being then at full term. She was admitted to the service of Dr P Brooke Bland at the Jefferson Medical College Hospital. After thirty-six hours of active labor without any apparent progress Dr Thaddeus L Montgomery delivered her of a living baby by cesarean section under local anesthesia. Immediately following delivery the cardiac rate was 40 per minute. The patient was discharged from the maternity after two weeks of an uneventful puerperium.

Further electrocardiographic studies by Dr Patterson, taken immediately after delivery, were as follows. August 5 the interval between auricular and ventricular contractions was the same and varied from 18 seconds to 12 seconds. The auriculoventricular conduction time was 0.4 second. Another record taken on the late afternoon of the same day showed regular rhythm of auricles and ventricles at 60 per minute, with the same auriculoventricular conduction time as before. August 8 the auricular and ventricular rates were 75 per minute and the conduction time was 0.4 second. August 9, the auricular and ventricular rates were 75 per minute, conduction time was 0.4 second. October 16, there was complete heart block. The auricular rate was 60 per minute and the ventricular rate 48 per minute.

Altogether, ten electrocardiographic studies were made on nine different dates, beginning Nov 27, 1931 and ending Oct 16, 1933. All showed complete dissociation of auricular and ventricular contractions, with the exception of two records on Aug 5, 1933, and one record each on Aug 8 and Aug 9 1933, in which there was delayed conduction without complete block. The last study, made Oct 16, 1933, showed a reversion to complete block.

Physical examination Oct 16, 1933, on several occasions during 1934 and again in January 1935 showed the patient to be free from any cardiac symptoms. She had gained some 15 pounds (6.8 Kg) since the birth of her child in August 1933.

HEART DISEASE AND PREGNANCY

Bland¹⁹ observes that "organic lesions of the heart wall or of its valves are sometimes seriously aggravated during pregnancy." Further, he states "The strain of labor does not interfere with cardiac function, so long as compensation is maintained, but the exertion of the second stage may occasionally prove disastrous in threatened or frank incompetency. The great danger under such circumstances is acute dilatation of the right heart and sudden death."

De Lee²⁰ states "My own experience has taught me to fear the complication of heart disease with pregnancy, for, even though one finally brings the patient through alive, the dangers that threaten at every step are very disquieting and when accidents do occur they require the promptest and most skilful treatment." De Lee further observes that "it is generally admitted that the heart is peculiarly liable to disease during gestation and that existing disorders are aggravated."

Pardee²¹ in an article on cardiac conditions indicating therapeutic abortion remarks

After 1924 the functional classification that had been introduced by the New York Heart Association was used in the cardiac antepartum clinic of the Lying-In Hospital for it was considered inadvisable to have one functional classification for cardiac patients who were pregnant and another for those who were not.

The basis of this functional classification is the patient's history of her ability to perform the ordinary physical activity

19 Bland P B and Montgomery T L. Practical Obstetrics for Students and Practitioners. Philadelphia F A Davis Company 1934 pp 71 and 144.

20 De Lee J B. Principles and Practice of Obstetrics ed 6 Philadelphia W B Saunders Company 1933 p 536.

21 Pardee H E B. Cardiac Conditions Indicating Therapeutic Abortion. J A N A 103 1899 1902 (Dec 22) 1934.

of her everyday life without unusual shortness of breath or palpitation. The patient's statements as to her ability to exercise are combined with an observation of the pulse rate and the respiratory reaction after a rather strenuous test exercise performed in the presence of the physician. According to the results of this method cardiac patients are divided into four categories as follows:

Class 1 Patients with heart disease who are able to undertake ordinary physical activity without discomfort, such as palpitation or dyspnea, and who perform the test exercise without unusual tachycardia or dyspnea.

Class 2A Patients whose ordinary activity is slightly limited because of the appearance of dyspnea, palpitation or fatigue, and who show somewhat excessive tachycardia and dyspnea after the test exercise.

Class 2B Patients whose activity is greatly limited because of the appearance of dyspnea or palpitation and who show marked tachycardia and dyspnea after the test exercise or who are unable to complete it.

Class 3 Patients whose activity is so limited as to make them unable to walk around without dyspnea or palpitation and who are so evidently dyspneic after such slight efforts as getting into and out of bed or walking across the room as to make any other exercise test unnecessary.

The foregoing classification, which is essentially that suggested in the Criteria for the Classification and Diagnosis of Heart Disease¹ has been the one I have used. The patient in this case was grouped in class 1 since she did not show physical signs of cardiac insufficiency or any discomfort after ordinary activity.

It is obvious that to the usual perils of pregnancy in the cardiac patient one must take into account in a case such as that just reported the superimposed dangers that may arise because of an existing heart block.

COMMENT

The etiology of the heart block in the case here reported is probably due to syphilis. Blood Wassermann tests were repeatedly plus four, while the history of the case failed to tell of any of the other causes of heart block.

Antisymphilitic treatment was instituted when the patient first came under my observation in November 1931 and was continuous through the gestation in 1933. Of special interest is the fact that the complete heart block was changed to delayed auriculoventricular conduction time of 0.4 second, Aug. 5, 1933, immediately following delivery. This persisted at least until August 9, as evidenced by the electrocardiograms. Later electrocardiographic studies showed a reversion to complete heart block.

CONCLUSION

Experience with this case of heart block and pregnancy in addition to the six similar cases reported by others, suggests that the gestation should not be interrupted if cardiac compensation maintains. Patients with heart block and pregnancy should be observed frequently. Electrocardiographic studies are advisable. Sufficient rest should be obtained by the patient, thus avoiding overexertion and cardiac decompensations. Prolonged labor should not be permitted, and delivery should be by cesarean section or by the use of forceps. Local or spinal anesthesia should be used.

There is no escape from the fact that pregnancy should be terminated if heart failure occurs in a gravid cardiac patient including heart block. Fortunately in the case here recorded there were no signs of decompensation during the period of gestation. Hence the patient was permitted to go to full term. The result justified the conservative measures.

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THE EFFECT OF EPHEDRINE ON THE EMPTYING TIME OF THE HUMAN STOMACH

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AND

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Since the introduction of ephedrine for therapeutic use by Chen and Schmidt in 1924¹ it has been widely used in clinical medicine. It probably enjoys the greatest use in asthma, hay fever and hypotensive states. It is, however, used in many other conditions. Wood² found it of use in a case of Adams Stokes' syndrome, Doyle and Daniels³ reported its use in the treatment of narcolepsy, and Arnett⁴ reported using it in amylal poisoning. Other instances could be enumerated in which new uses have been found for this drug.

Considerable work has been reported on the effect of ephedrine on the gastro-intestinal tract. Kinnaman and Plant,⁵ working with unanesthetized dogs that had permanent gastric fistulas, observed that ephedrine relaxed gastric tone and inhibited motility. McCrea and MacDonald⁶ found that ephedrine inhibited gastric peristalsis and caused a fall in intragastric pressure in cats. Marcu and Savulesco,⁷ using the balloon method, found that minute doses of ephedrine caused transitory contraction but that larger quantities produced inhibition of gastric movements.

In view of these studies and since ephedrine is used so widely in medicine, it was thought well worth while to study its effect on the emptying time of the stomach in man.

METHOD

The normal emptying time of the stomach was ascertained fluoroscopically in six healthy young male subjects. The experimental meal was given at 8:30 a.m. No food had been taken since the evening before. The standard meal consisted of 15 Gm of Quaker Farina. This was boiled in 350 cc of water until it reached a total volume of 200 cc, 1 Gm of salt was added for flavor and barium sulfate (50 Gm) was added so that the contents of the stomach could be seen with the fluoroscope. Approximately eight control determinations of the emptying time of the stomach were made on each individual. The average of these figures was used for the control.

The effect of the ephedrine sulfate was now studied. One grain (0.065 Gm) of ephedrine sulfate with about 3 ounces (90 cc) of water was given about twenty minutes before the standard meal was eaten. The emptying time of the stomach was determined fluoroscopically as already described. Attention was given, of course, to all details that were essential for carefully controlled experimental conditions.

From the Department of Physiology, University of West Virginia. Aided by a grant from the Committee on Scientific Research of the American Medical Association.

1. Chen K. K. and Schmidt C. F. The Action of Ephedrine the Active Principle of the Chinese Drug Ma Huang. *J. Pharmacol. & Exper. Therap.* 24: 339 (Dec.) 1924.

2. Wood J. E. Ephedrine in Adams Stokes Syndrome. *J. A. M. A.* 98: 1364 (April 16) 1932.

3. Doyle J. B. and Daniels L. E. Narcolepsy. Results of Treatment with Ephedrine Sulfate. *J. A. M. A.* 98: 543 (Feb. 13) 1932.

4. Arnett J. H. Ephedrine and Picrotoxin Used Successfully in Amytal Poisoning. *J. A. M. A.* 100: 1593 (May 20) 1933.

5. Kinnaman J. H. and Plant O. H. Effect of Ephedrine on Intestinal Contractions in Unanesthetized Dogs. *J. Pharmacol. & Exper. Therap.* 31: 212 (July) 1927.

6. McCrea E. D. and MacDonald A. D. Action of Drugs on Movements of Stomach. *Quart. J. Exper. Physiol.* 19: 161 (April) 1928.

7. Marcu I. and Savulesco A. Motilité de l'estomac sous l'influence de l'éphedrine, considérations sur l'amphotropisme de cet alcaloïde. *Comp. rend. Soc. de biol.* 98: 243 (Jan. 27) 1928.

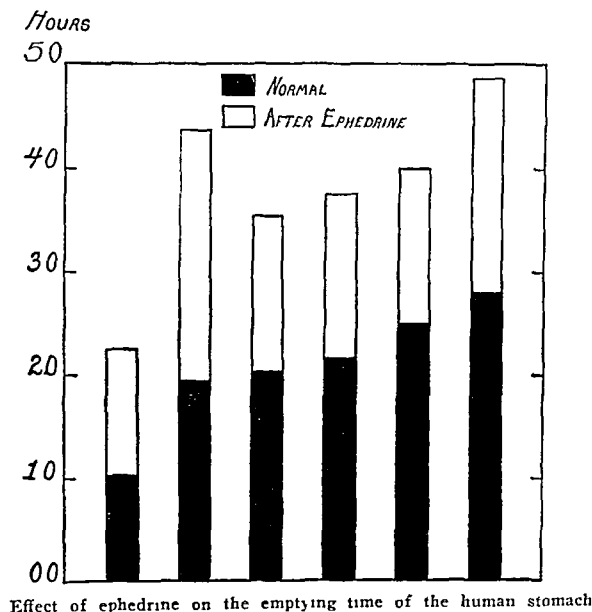
RESULTS

The accompanying table and chart show the results obtained

The table shows that there is considerable variation in the normal emptying time of the stomach. The extremes were 1.03 hours and 2.80 hours. The average for the six individuals was 2.07 hours. It will be seen that ephedrine produced a marked effect on the emptying time of the stomach. In two individuals it was prolonged over 118 per cent and in no case was the prolongation less than 72.8 per cent. The average prolongation of gastric evacuation for the six individuals was 91.66 per cent.

The Effect of Ephedrine on the Emptying Time of the Stomach

Subject	Normal in Hours	Effect of Ephedrine in Hours	Delay Caused by Ephedrine in per Cent
1	2.17	3.73	72.80
2	1.94	4.37	125.30
3	1.03	2.21	118.40
4	2.50	4.50	80.00
5	2.02	3.62	79.40
6	2.80	4.67	74.10
Average	2.07	3.89	91.66



COMMENT

It is generally conceded that ephedrine has an action similar to that of epinephrine. The main difference is that the former has a much more sustained action. Both preparations stimulate the sympathetic nervous system. The sympathetic fibers to the stomach are carried by the splanchnic nerves. These fibers, when stimulated, inhibit stomach motility. It would be expected then that ephedrine would delay gastric evacuation.

Not only is ephedrine capable of stimulating the sympathetic fibers but it may also have a further action in that it may relax the smooth muscle. Chen and Schmidt⁸ reported that the effect of ephedrine on isolated muscle of the intestinal tract was inconstant but that it more frequently inhibited than stimulated. Swanson⁹ found that practically all the ephedrine-like compounds showed distinct inhibition of intestinal

movements. Balyeat and Rinkel¹⁰ reported that ephedrine may relax the bladder and give rise to urinary retention, in fact its use is suggested for nocturnal enuresis.

It may well be, then, that ephedrine has two distinct actions on the stomach, first it may stimulate the sympathetic fibers, which would cause diminished motility of the stomach, and, second, it may actually relax the smooth muscle directly.

Besides these modes of action of ephedrine its effect on the pylorus sphincter must be considered. As far as we are aware there is nothing in the literature that deals with the effect of ephedrine on the pylorus. Thomas,¹¹ however, has reported considerable work on the influence of epinephrine on the pyloric sphincter. He found that on the whole no pronounced changes in tonus of the pyloric sphincter were caused by epinephrine, it is apt to increase the tonus of the pylorus when the muscle is relaxed and may decrease the tonus when the muscle is contracted. It is possible, in lieu of these observations, that ephedrine may have caused a certain amount of increased tonus of the pyloric sphincter. It is very problematic in our judgment that this was an important factor in delaying the emptying time of the stomach. We feel that the real delay was caused by the factors already mentioned.

We wish at this point to emphasize the fact that the results reported in this paper may well have important clinical significance. If a patient, for example, is receiving ephedrine sulfate regularly for some chronic ailment such as a hypotensive state or asthma, there is every reason to believe that the emptying time of the stomach of such a patient would certainly be delayed. Furthermore in evaluating the experimental results obtained it is necessary to point out that the standard test meal used consisted practically of carbohydrates. This meal left the stomach quickly, as our control figures show. If, on the other hand a larger meal had been given containing not only carbohydrates but also fats and proteins and if we are allowed to assume that gastric evacuation would be proportionally prolonged, food would be retained in the stomach for a long time indeed.

The fact that ephedrine has such a marked effect on gastric motility makes it not unreasonable to suppose that ephedrine could cause a certain amount of stasis in the small and large intestine.

In view of the results reported in this paper it is suggested that the clinician pay considerable attention to the diet as well as to the elimination in patients who are receiving ephedrine regularly.

SUMMARY AND CONCLUSIONS

It was found that under carefully controlled conditions ephedrine sulfate in therapeutic doses, 1 gram (0.065 Gm.) prolonged the emptying time of the stomach in six healthy young male subjects. In the case of two individuals gastric evacuation was prolonged over 118 per cent. In no case was the prolongation less than 72.8 per cent. The average prolongation for the six individuals was 91.66 per cent.

In view of the fact that ephedrine is so widely used in more or less chronic conditions such as asthma, hypotensive states and hay fever, it is felt that the results reported in this paper are of interest to clinical medicine.

⁸ Chen, K. K. and Schmidt, C. F. Ephedrine and Related Substances. *Medicine* 9, 1 (Feb.) 1930.
⁹ Swanson, E. E. A Comparative Pharmacological Study of Some Related Ephedrine Compounds. *J. Am. Pharmaceut. A.* 21, 1125 (Nov.) 1932.

¹⁰ Balyeat, R. M. and Rinkel, H. J. Urinary Retention Due to the Use of Ephedrine. *J. A. M. A.* 98, 1545 (April 30) 1932.
¹¹ Thomas, J. E. A Further Study of the Nervous Control of the Pyloric Sphincter. *Am. J. Physiol.* 88, 498 (April) 1929.

Clinical Notes, Suggestions and New Instruments

UNUSUAL ORIGIN OF A MECKEL'S DIVERTICULUM FROM THE BASE OF THE APPENDIX

M N HADLEY M D AND H D COGSWELL M D INDIANAPOLIS

Meckel's diverticulum, once considered a medical curiosity, has come to be recognized as a definite pathologic entity as the result of the abundance of literature that has appeared in late years. In the years 1930-1931 and the first half of 1932 fifty-six articles appeared in the literature of the different countries dealing with Meckel's diverticulum.¹

Lavater² in 1671 was one of the first to record a case of diverticulum of the terminal ileum. In 1707 an excellent illus-

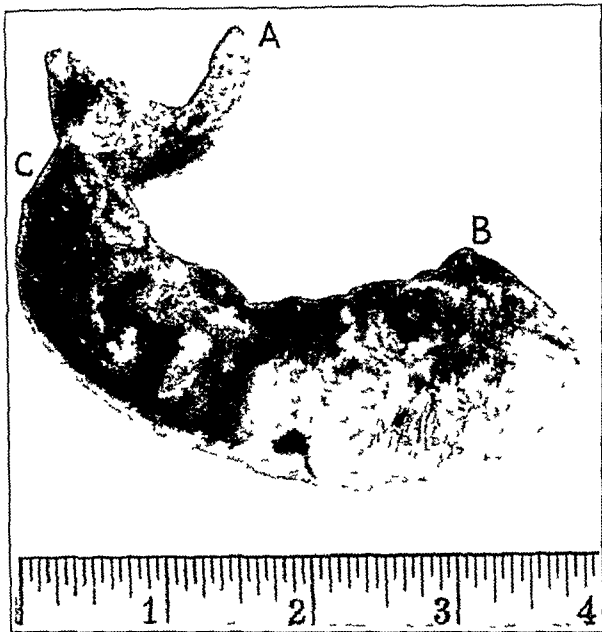


Fig 1—A appendix B origin of the band of tissue that extended to the umbilicus C junction of the appendix and the diverticulum

tration of a diverticulum of this type was given by Ruysch.³ Morgagni⁴ discussed diverticula of the intestine in his treatises in 1809, but it remained for Meckel in the same year to advance the theory of its origin and to describe the condition more fully. There were only occasional reports of the complications arising from a Meckel's diverticulum until 1905, when Porter⁵ collected reports of 184 pathologic cases, stressing the importance of this embryologic remnant. Since that time there have been many reports published of the various anomalies and complications existing with a Meckel's diverticulum, but no record can be found similar to the case here recorded.

The distance that a Meckel's diverticulum is found from the ileocecal valve varies greatly. We have been unable to find a report of a diverticulum originating nearer to the ileocecal valve than 4 cm.⁶ Von Rokitsansky⁷ believed that it was 1 to 2 feet from the cecum. Cunningham's anatomy states that in a large series of autopsies the greatest distance was 12 feet and the smallest distance was 6 inches. In Christie's² series the site of the diverticulum varies from 6 to 36 inches.

The illustrations were made by Mr F. Glone and Mr H. Salinger from the division of general surgery, Indiana University School of Medicine.

1. Hudson H. W. Jr. Meckel's Diverticulum in Children. New England J. Med. 208: 525 (March 9) 1933.

2. Quoted from Christie A. U. Meckel's Diverticulum. Am J. Dis Child. 42: 544 (Sept.) 1931.

3. Ruysch, Fredericus. Theatrum anatomicum. Amsterdam. J. Wolters 1707. vol. 7. fig. 283.

4. Morgagni, quoted from Michael Paul. Tuberculosis of Meckel's Diverticulum. Arch. Surg. 25: 1152 (Dec.) 1932.

5. Porter M. F. Abdominal Crises Caused by Meckel's Diverticulum. J. A. M. A. 15: 883 (Sept. 23) 1905.

6. Keen W. W. Principles and Practice of Surgery. Philadelphia. W. B. Saunders Company. 4: 667. 1908.

7. Cunningham's Textbook of Anatomy. ed. 5. New York. William Wood & Co. p. 1200.

REPORT OF CASE

This case is presented because of the unusual location of a Meckel's diverticulum.

History—M. L., a white boy, aged 9 years, entered the James Whitcomb Riley Hospital Aug. 1, 1934, complaining of pain in the right lower quadrant of the abdomen, nausea and vomiting. The past history was irrelevant except for the usual diseases of childhood. The family history revealed that the patient had had a younger brother who died of intussusception at the age of 9 months. The boy had been feeling well until the day before admission to the hospital. On the morning of July 31 he had been walking stooped over and, on questioning, his mother found that he was having pain in the right lower quadrant. He was given magnesia magma and by noon he had vomited and was crying with pain. That evening he was given another laxative and he slept poorly.

Examination—The physical examination showed right rectus rigidity, rebound tenderness, pain and tenderness over McBurney's point, a mass about the size of a plum was palpated in this area. Laboratory studies revealed a normal urinalysis, normal red blood count and hemoglobin, the white blood count was 12,450, with 38 per cent polymorphonuclears, 1 per cent basophils, 12 per cent lymphocytes, 2 per cent myelocytes, 2 per cent metamyelocytes and 45 per cent band cells. The Wassermann reaction was negative.

Operation and Course—A preoperative diagnosis of acute appendicitis was made, and the abdomen was opened through a McBurney incision. Lying lateral to the cecum, a discolored sausage shaped mass was found (fig. 1), which originated from the base of the appendix and proved to be a diverticulum of the appendix. At the distal end of the mass there was a band of tissue containing a few small blood vessels which ran medial and was attached to the underside of the umbilicus. This band was ligated and cut. The appendix was then ligated and amputated.

The pathologic condition was evidently due to the rotation of this diverticulum from a medial position to its lateral position in relation to the cecum. This produced a torsion in the appendix, obstructing its lumen and causing a circulatory disturbance, which was responsible for the acute condition found.

The patient made an uneventful convalescence and left the hospital August 11. Pathologic examination by Dr. C. G. Culbertson revealed that the gross specimen consisted of an appendix and 1.5 cm. from the base of the appendix, a large

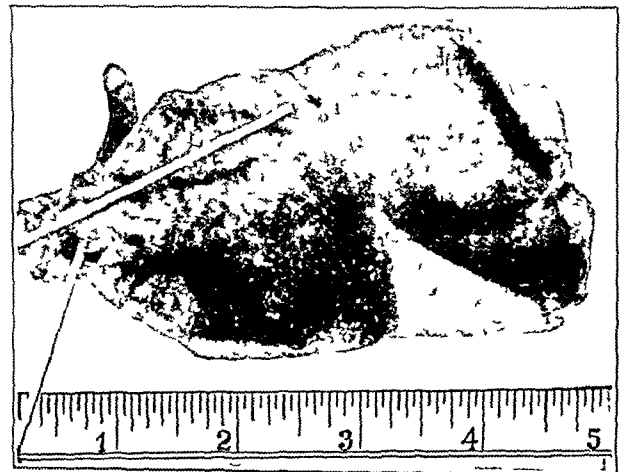


Fig 2—The diverticulum opened and a probe introduced from the diverticulum to its opening into the appendix.

diverticulum which was cylindric and measured approximately 9 cm. in length. At the distal end of the diverticulum was a ligated cylindric cord which was said to be attached at the distal end to a region near the umbilicus. No structure resembling a peptic ulcer was present. The appendiceal attachment of the diverticulum was split open, and it was seen to have a small lumen which was continuous with the lumen of the appendix.

A section of the wall of the diverticulum showed on microscopic examination the peritoneal layer and the subperitoneal

layer to be edematous and to be diffusely infiltrated with lymphocytes, plasma cells and eosinophils. Both muscular coats showed leukocytic infiltration. The mucosa was that of the large intestine. The lining epithelium of the mucosa was ulcerated in many places and contained polymorphonuclear leukocytes. A section of the structure that connected the diverticulum with the umbilicus showed only a mass of fibrous tissue containing numerous veins and arteries.

COMMENT

The unusual location of this diverticulum can be better understood if the embryology of its formation is considered.

The yolk sac in the human embryo develops early, and at the end of the second week is a sac with a wide opening into the intestine. During the third week the yolk sac becomes somewhat constricted off, remaining connected, however, with the lumen of the intestine by a pedicle, called the yolk stalk or vitelline duct.

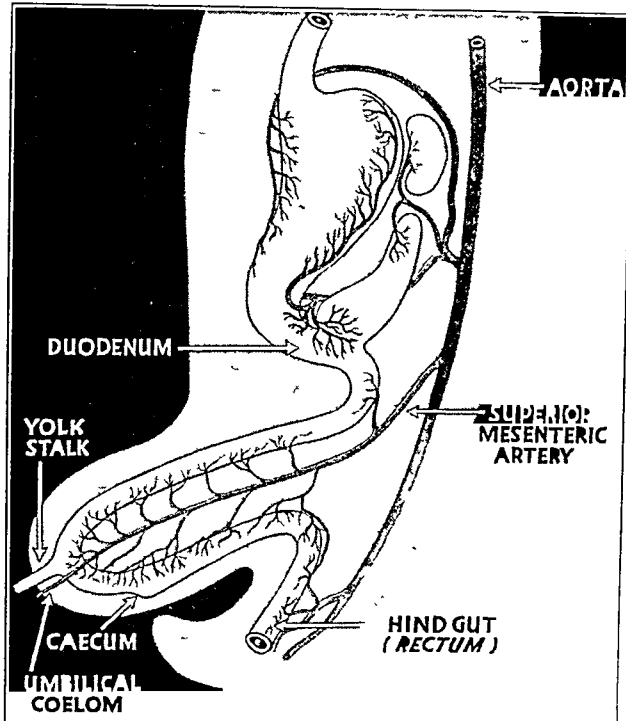


Fig. 3—Loop of intestine and umbilical coelom with the yolk stalk still intact. Anlage of cecum.

The yolk stalk is attached to the intestine a short distance from the stomach in the primitive gut, which at this early stage forms a simple tube of uniform diameter extending from the stomach to the caudal end of the embryo. A portion of the gut then forms a loop, the apex of which extends into the umbilical coelom and is attached to the yolk stalk (fig. 3). Soon after the loop is formed, a small evagination appears in the descending portion of the loop, not far from the apex. This is the anlage of the cecum.⁸ This anlage for a time continues to increase uniformly in size, then the proximal end increases more rapidly than the distal and forms the cecum. The distal end, failing to keep pace in development, remains slender and forms the vermiform appendix.

Usually at the time that the anlage of the cecum can be defined, the yolk stalk becomes reduced to a cord of cells in the umbilical cord and separates from the loop of gut. In a small percentage of cases that portion of the yolk stalk lying between the intestine and the umbilicus fails to degenerate and is then known as a Meckel's diverticulum. This marks the position of the original 'apex' of the umbilical loop.⁹

Evidently, in this case, the yolk stalk at the apex of the umbilical loop, was attached to that area of gut where the anlage of the cecum was to make its appearance. During the

development of the appendix and cecum this was at the distal end of the anlage, so that at the end of their development the diverticulum was present at the base of the appendix.

809 Hume-Mansur Building

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

HOWARD A. CARTER, Secretary

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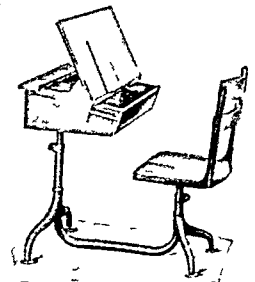
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American Universal
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8 Bailey, F. R. and Miller, A. M. Text Book of Embryology New York: William Wood & Co. 1929, p. 306.
9 Frazer, J. E. Manual of Embryology London: Bailliere Tindall & Co. 1931, p. 399.

Council on Pharmacy and Chemistry and Committee on Foods

The Council on Pharmacy and Chemistry and the Committee on Foods of the American Medical Association record with deep sorrow the death, Dec 9, 1935, of

LAFAYETTE BENEDICT MENDEL

Born at Delhi, N Y, Feb 5, 1872, Professor Mendel was graduated from Yale University in 1891. He became interested in physiology and physiologic chemistry as a student under Prof. Russell H. Chittenden and received the degree of Doctor of Philosophy in that department of study in 1893. After a period of study and travel abroad he returned to Yale where he achieved conspicuous success as a teacher. He was appointed professor of physiologic chemistry in 1903, and in 1920 he was appointed to the newly created Sterling professorship, which position he held up to the time of his death.

As an investigator his interest was chiefly in the field of nutrition, and his wide reputation in that field grew in large measure out of his joint contributions with Dr. Thomas B. Osborne of the Connecticut Agricultural Experiment Station, where for many years, and until his death, he was associate biochemist. These outstanding biologic studies revealed wide differences between various proteins in the alimentation of animals and brought to light many hitherto obscure facts concerning the role of amino acids, vitamins and inorganic constituents in the phenomena of growth and nutritional well being. He published alone or with associates nearly 300 scientific papers and in addition wrote many editorials, reviewed many scientific books and made numerous popular addresses. His essays "Childhood and Growth," "Changes in the Food Supply and Their Relation to Nutrition" and "Nutrition, the Chemistry of Life" are in book form. Professor Mendel's familiarity with scientific literature, his command of English and his unusual powers of exposition enhanced the force of his scientific works and gave them literary charm.

In an advisory and consulting capacity he served his university on numerous departmental boards and committees among them the Board of Permanent Officers of the Yale Graduate and Medical schools and the Governing Board of the Sheffield Scientific School. During the World War he gave generously of his time to various activities under the auspices of the Department of Science and Research of the Council of National Defense and as a member of the Interallied Scientific Food Commission.

Professor Mendel was keenly interested in the chemical aspects of problems in medicine, and in 1934 the New York Chemists Club awarded him the Conne medal for his outstanding contributions in that field. This interest together with his profound knowledge of physiologic chemistry and nutrition made his service to the Council on Pharmacy and Chemistry and to the Committee on Foods of the American Medical Association, of inestimable value. He served the Council for eighteen years and the Committee from the beginning of its work and he served both with characteristic interest and loyalty.

Abundant and deserved recognition came to him in the form of academic honors, citations by learned societies, and recognition by industrial and trade associations of national scope thus indicating at once the wide appreciation of his scientific achievements and the breadth of his interests.

On his sixtieth birthday former students of Professor Mendel presented him with a portrait of himself done by John Quincy Adams. This testimonial of regard and affection suggests those finer attributes of the man himself which impressed his pupils, his colleagues and his friends, and which are aptly described by his contemporary, Dr. Graham Lusk, who has said of him:

"He has been the guide, philosopher and friend to many young men and women; he has encouraged them to walk by themselves when they were able to stand alone and he has given wise counsel in times of difficulty. Herein he has shown himself as one of the great teachers of his time."

His colleagues on the Council and the Committee will remember him for his high ideals of service, his vision and his knowledge, but they will cherish his memory no less as a wise and sympathetic counselor and loyal friend, who commanded their confidence and won their esteem.

Committee on Foods

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THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

FRANKLIN C. BING, Secretary

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Moisture	85.3
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Fat (ether extract)	0.3
Protein (N × 6.25)	0.3
Reducing sugars as invert sugar	8.6
Sucrose (copper reduction method)	3.7
Crude fiber	0.02
Carbohydrates other than crude fiber (by difference)	12.8
Titratable acidity as citric acid	0.9
Calcium (Ca)	0.02
Copper (Cu)	0.0002
Iron (Fe)	0.0005
Magnesium (Mg)	0.02
Manganese (Mn)	0.0003

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SATURDAY, FEBRUARY 15 1936

ALLERGY, IMMUNITY AND THE TUBERCULIN REACTION

At this time respiratory disease occupies more than its usual share of clinical attention. The differentiation of tuberculous from nontuberculous pulmonary diseases becomes of increasing importance. The recent communication of Dr Myers¹ in THE JOURNAL justly and properly focuses attention on the tuberculin reaction and its genesis, course and significance. In the past it was generally assumed that a positive Mantoux test signified immunity (as well as allergy) to the tubercle bacillus and conversely that a negative test meant lack of infection, lack of allergy and absence of immunity. Experimental evidence now shows convincingly that this visible reaction is not a necessary concomitant of immunity and that the latter can function fully and effectively in the complete absence of evidence of this hypersensitivity.² Further, it has even been shown that the allergic necrotizing-inflammatory response, far from being helpful or protective, may even be injurious.³ The so-called anergic, or nonreactive, phase has long been known—a negative response in the presence of highly active or overwhelming infection. These investigations and others tend to refute the frequently heard contention that a negative tuberculin test means absence of immunity. It is not improbable that an early infection even without the almost inevitable subclinical reinfections may leave an immunity lasting long after the positive skin test has completely disappeared or at least defies detection.

Much of our present information is empirical and, in making any empirical study,⁴ clearly understood and

uniform criteria are prerequisite. The absence of such criteria in clinical investigations of tuberculosis has been an obstacle to more rapid progress. The possibility that various observers are seeing different forms of tuberculosis in their respective localities is another hindrance. Erythema nodosum is such an example. Workers in tuberculosis in the United States and other sections of the Western World see less erythema nodosum than their clinical colleagues in Europe and the Old World. Further, there is no general agreement that its etiology is tuberculous. Though most investigators feel that it is an allergic manifestation of some sort, its true nature as yet unknown. Nor should we allow ourselves to be lulled into an attitude of false security by such apparently satisfying terms as resistance and immunity. These are merely relative. The course of any infection is determined by the size and virulence of the infecting inoculum and by the state of the host's immunity or resistance (be it inherent or acquired, active or passive) and is to a large extent conditioned and modified by the degree of activity of his specific hypersensitive state. The activity of the latter is known to fluctuate unpredictably and may depend largely on the factor of time alone. Allergy to the tubercle bacillus may last a lifetime (the result of how many subclinical reinfections we have no way of knowing), whereas allergy to a micro-organism such as the pneumococcus is quite short lived. The state of resistance, however, is much less easily ascertained, some estimate can frequently be made from the individual history, from the racial and constitutional type, and occasionally from immunologic and bacteriologic laboratory studies. All too commonly, survival from infection is its only real measure.

Finally, then, on what is the diagnosis of tuberculosis to be made? The finding of a negative response to tuberculin will rule out tuberculosis as the basis of certain clinical disorders, whereas a positive test means only that the hypersensitivity is present.⁵ In each instance the possible relationship of this hypersensitivity to the disease under observation still remains to be proved. The tuberculin test is of definitely limited value. No test or method will supersede the painstaking study of the individual patient. This together with the recognition of the ever present possibility of tuberculous infection will allow few cases to go undiscovered. An upper lobe pneumonia that resolves with abnormal slowness or incompletely or a long standing "postinfluenzal asthenia with low grade fever" is at times explained with extraordinary ease by a careful search of the sputum or the roentgenogram of the chest. If each patient is to get the best management and if we are to maintain the advances made against the ravages of the "white plague," we cannot afford to relax vigilance.

¹ Myers J. A. The Tuberculin Reaction. J. A. M. A. 105: 1702 (Nov. 23) 1935.

² Rich A. R. Lancet 2: 521 (Sept. 2) 1933. Rich A. R. Jennings F. B. Jr. and Downing I. M. Bull. Johns Hopkins Hosp. 53: 172 (Oct.) 1933. Rich A. R. Acta paediat. 16: 1 (1933). Rothschild Herbert. Friedenwald J. S. and Bernstein Clarence. Bull. Johns Hopkins Hosp. 54: 232 (April) 1934. Clawson B. J. Arch. Path. 19: 673 (May) 1935. J. Infect. Dis. 53: 157 (Sept. Oct.) 1933. Proc. Soc. Exper. Biol. & Med. 31: 165 (Nov.) 1933. Clawson B. J. and Baker A. B. J. Infect. Dis. 56: 297 (May/June) 1935.

³ Rich and others. Seibert F. B. Proc. Soc. Exper. Biol. & Med. 30: 1274 (June) 1933.

⁴ Myers J. A. Am. Rev. Tuberc. 27: 121 (Feb.) 1933. Myers J. A. and Harrington F. E. The Effect of Initial Tuberculous Infection on Subsequent Tuberculous Lesions. J. A. M. A. 103: 1530 (Nov. 17) 1934. Ustvedt H. J. Initial Infection with Tuberculosis and Subsequent Lesions. Ibid. 104: 851 (March 9) 1935. Heimbeck Johannes. Tuberculous Infection. Arch. Int. Med. 47: 901 (June) 1931.

⁵ Hamman Louis and Wolman Samuel. Tuberculin in Diagnosis and Treatment. New York: D. Appleton & Co. 1912.

THE IODINE REQUIREMENT OF MAN

The importance of iodine in human nutrition and the relation of this element to hypertrophy of the thyroid gland were suggested in the earliest medical writings. It has been stated¹ that the Chinese knew of the beneficial effect of substances now known to be rich in iodine many centuries before the time of Christ and that the feeding of the ash of the sponge, also known to contain large amounts of iodine was a common treatment for goiter at the time of Hippocrates and Galen. Similar accounts appear in early American literature. In a "History of the White Mountains," Mrs. Lucy Crawford² refers to the frequency of enlargement of the thyroid gland in natives of Coos County, N. H. at the close of the seventeenth century and relates how her grandfather brought sea salt a bushel at a time, 80 miles over the mountains on his back. The suggestion that the chemical element iodine itself was effective in the treatment of goiter was made in 1820 by Comdet,³ only nine years after the discovery and isolation of iodine as a chemical entity by Courtois. Soon after this in 1833, iodized salt was suggested for the prevention of goiter by the young French chemist Boussingault.⁴ The effectiveness of iodine in the control of goiter was largely discredited at the time of these reports and not until 1895 when Baumann⁵ actually demonstrated the presence of iodine in the thyroid gland, was the relationship unequivocally established.

As in the case of other elements and substances necessary for human welfare questions soon arose regarding the amount of iodine needed to meet the daily human requirement. Information in this direction has been secured by the use of the well known nutritional device the method of 'balance' determinations, in which the amounts of the substance in question that are excreted and retained are determined in subjects ingesting varying quantities. The first comprehensive study of this type on iodine⁶ indicated that a normal adult human subject remained in positive iodine balance when as little as 17 micrograms of the element was consumed in the daily diet. Approximately 84 per cent or 14 micrograms of the ingested iodine was excreted. It is of some interest that considerable amounts of iodine, from 10 to 15 per cent of the total were excreted in the sweat and nasal secretions and that approximately 80 per cent appeared in the urine and from 5 to 10 per cent in the feces. As might be expected, there was an increased excretion of iodine in subjects consuming larger amounts of the element, a

maximum retention of approximately 20 micrograms was observed. Similar results have been recorded in a series of twelve normal subjects ingesting from 54 to 155 micrograms of iodine daily⁷ and, more recently,⁸ on two normal individuals consuming 56 and 156 micrograms, respectively, of iodine each day. Unfortunately, in the latter study the amount of iodine excreted in the sweat was not determined. From the data recorded in the foregoing investigations it appears that the daily iodine retention in normal individuals consuming varying amounts of this element does not exceed between 15 and 25 micrograms, thus indicating that the actual requirement of the normal human adult probably does not exceed 25 micrograms daily. Undoubtedly the suggested value of 50 micrograms daily as the amount that should be present in the human dietary allows a satisfactory margin of safety.

In patients with certain diseases of the thyroid gland there appear to be significant variations from the normal in the excretion of iodine. In cases of hyperthyroidism with or without goiter, for example, there is a marked increase in the amount of iodine excreted daily in the feces.⁹ It has also been stated that there is an increased loss of iodine in the sweat of patients with hyperthyroidism.¹ Changes such as these in the excretion of iodine in diseases of the thyroid gland are of singular interest and merit further thorough investigation.

CUMULATIVE ACTION OF DIGITALIS
GLUCOSIDES AND CARDIAC
NECROSIS

The persistent action of digitalis suggested long ago an accumulation of the drug in the body. The selective action on the heart and blood vessels indicated possible selective distribution of the digitalis to these organs. Straub¹ developed evidence of such selective action of strophanthin in the frog ventricle. Later, however, Weese² showed that not more than 9 per cent of digitalis glucosides accumulate in the mammalian heart. The content of digitalis in the heart decreased as other organs, such as the kidney and liver, were added to a heart-lung system. Weese concluded that the distribution of digitalis was largely extracardial, a view supported by demonstration of a concentration of the drug in the liver and other viscera of digitalized birds, reported by Hanzlik and Wood.³

Textbooks, however, have continued to record the clinical impressions of cardiac accumulation and have supported these with the original experimental results

1 Marine, David. Iodine in the Treatment of Diseases of the Thyroid Gland. *Medicine* 6: 127 (Feb.) 1927.

2 Crawford, Lucy. cited by Marine.¹

3 Comdet. Decouverte d'un nouveau remede contre le goitre. *Ann de chim et de phys* 15: 49 1820.

4 Boussingault, M. Memoire sur les salines iodiferes des Andes. *Ann de chim et de phys* 54: 163 1833.

5 Baumann, E. Ueber das normale Vorkommen von Jod im Tierkorper. *Ztschr f physiol Chem* 21: 319 1895.

6 von Fellenberg, T. Das Vorkommen der Kreislauf und der Stoffwechsel des Jods. *Ergebn d Physiol* 25: 176 1926.

7 Scheffer, L. Ueber die Jodbilanz normaler Menschen. *Biochem Ztschr* 259: 11 1933. Jodstoffwechsel bei Schilddruesenkranken. *Klin Wchnschr* 12: 1285 (Aug 19) 1933.

8 Cole, V. V. and Curtis, G. M. Human Iodine Balance. *J Nutrition* 10: 493 (Nov.) 1933.

9 Scheffer, L. Cole and Curtis.⁸

1 Straub. *Biochem Ztschr* 28: 392 1910.

2 Weese, H. Arch f exper Path u Pharmacol 135: 228 1928. 141: 329 1929. 150: 14 1930. 172: 699 1933.

3 Hanzlik, P. J. and Wood, D. A. *J Pharmacol & Exper Therap* 57: 67 (Sept.) 1929.

of Hatcher⁴ who studied the cumulative action in cats by his method of determining the fractional fatal dose necessary to kill after variable periods of medication. Since the cause of death was cardiac, the close association of cardiac accumulation and fatal dose appeared natural and conclusive. The theory of this procedure postulated only the chemical fate of the drug. It failed to take into consideration such effects as sensitization, desensitization and injuries that might be caused by the drug and the effects of these changes on successive doses of digitalis. This procedure has been questioned by German investigators and the so-called cumulative action is shown to be essentially a reaction of the injured heart resulting from the digitalization.

For instance, Bauer⁵ reports that digitalis and strophanthin cause typical necrotic changes in the hearts of cats treated with high doses of these drugs. The effects are of two kinds: reversible and irreversible, largely according to the result from the first dose. The outcome can be predicted in from two to four days after the first dose. If the heart is accelerated and its rhythm disturbed, the outlook is unfavorable because the second dose of digitalis for fatal effect will be small. But, if the heart action is normal the second dose will be high. Atropinization does not alter the outcome. Strophanthin requires about 25 per cent higher doses than does digitalis. The "cumulative" effects are to be looked for in the pathologic changes in the heart muscles, especially the papillary muscles and trabeculae. Dogs and rabbits do not show the "cumulative" actions and also do not show the necrotic changes in the heart.

The pathologic changes, which are described by Buchner⁶ consist of loss of nuclei from the cardiac muscle cells, leukocytic infiltration, cloudy swelling and degenerative processes—a picture of microscopic necrosis. Evidences of healing are strands of connective tissues, which replace the injured cardiac muscle. According to Buchner, the morphologic changes in the hearts of digitalized cats are not unlike those of clinical coronary disease. The necrotic changes of ischemia are suggested. Possibly they are the result of coronary contraction or of a direct action on the muscle cells, as digitalis is both a vasoconstrictor and an irritant. Whatever is the correct explanation, further tests by Weese and Kieckhoff,⁷ with heart-lung preparations of digitalized cats demonstrate that cardiac function is impaired. Provisionally, the German reports cast a doubt on the validity of the fractional fatal dose method of Hatcher for determining cumulative actions of digitalis and its allies.

Whether the reported functional and morphologic injuries in the cat heart occur in clinical digitalization is not known. Species differences are indicated by the apparently negative results with dogs and rabbits. Nevertheless, it has been asserted that clinical reactions to digitalis resemble the actions in cats. Spontaneous repair and reversibility of the cardiac processes suggest that permanent damage to a heart may not occur with ordinary therapeutic administrations, which are generally interrupted or periodic. Microscopic necrosis from the action of digitalis may be less serious than are the changes in an abnormal heart for which the digitalis is given. However, a pathologic or decompensated heart may be more readily injured by digitalis than is a normal heart. Actually, some clinicians feel that the wrong use of digitalis does little or no permanent good and may eventually do harm. These opinions are apparently not based on demonstrated pathologic changes in human hearts. Hence it would seem advisable to make clinical observations along these lines.

Current Comment

HORMONES AND NITROGEN METABOLISM

The internal secretion of the thyroid gland exerts a profound regulatory effect on metabolic processes. One of the most striking is the production of a distinct negative nitrogen balance. It has been observed, however, that the degree of negative balance is quite variable. As yet, a satisfactory explanation for the inconsistency has not been made. There are suggestions that the hormone of the adrenal cortex may likewise be involved in the maintenance of nitrogen balance. For example, in patients with Addison's disease a negative nitrogen balance exists, which becomes positive when adequate amounts of adrenal cortex extract are administered. A recent experimental study¹ adds further evidence to support the view of a relationship between adrenal cortical hormone, thyroxine and nitrogen metabolism. The nitrogen balance of adrenalectomized dogs was determined during control periods and periods during which either or both adrenal cortex extract and thyroxine were administered. A negative balance was sometimes observed in the animals that did not receive adrenal cortex extract or else received sub-maintenance doses, when thyroxine alone was given, consistent negative balances were found, as might be expected. The simultaneous administration of adrenal cortex extract with thyroxine, however, definitely lessened the degree of nitrogen loss. If sufficiently large doses were used, a positive balance sometimes could be obtained. Thus it appears that the amount of cortical hormone which is available is one of the factors that condition the amount of nitrogen catabolism induced by the hormone of the thyroid and that the cortical hormone exerts a protective action against the effect of thyroxine. This alleged relationship would afford another example of the antagonistic activity of the hormones in the regulation of body processes.

⁴ Hatcher R. A. and Brody J. G. The Biological Standardization of Drugs. *Am. J. Pharm.* **82**: 360, 1910. Hatcher R. A. and Bailey H. C. Tincture of Strophanthus and Strophanthin. *J. A. M. A.* **52**: 5 (Jan. 2) 1909. Hatcher R. A. and Eggleston Carey. The Emetic Action of the Digitalis Bodies. *J. Pharmacol. & Exper. Therap.* **4**: 113, 1912.

⁵ Bauer H. *Arch. f. exper. Path. u. Pharmacol.* **176**: 65-74, 1934.
⁶ Buchner F. *Arch. f. exper. Path. u. Pharmacol.* **176**: 59, 1934.
⁷ Weese H. and Kieckhoff J. *Arch. f. exper. Path. u. Pharmacol.* **176**: 274, 1934.

¹ Koelsche G. A. and Kendall E. C. The Relation of the Supra-renal Cortical Hormone to Nitrogen Metabolism in Experimental Hyperthyroidism. *Am. J. Physiol.* **113**: 335 (Oct.) 1935.

Association News

RADIO BROADCASTS

The American Medical Association broadcasts over WEA, the Red network instead of the Blue, as formerly, and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of 'Medical Emergencies and How They Are Met'. The title of the program is 'Your Health'. The program is recognizable by a musical salutation through which the voice of the announcer offers the toast 'Ladies and gentlemen, your health'. The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

Red Network—The stations on the Red network of the National Broadcasting Company are WEA, WEEL, WTIC, WJAR, WTAG, WSH, KYW, WFBR, WRC, WGY, WBN, WCAE, WTAM, WWJ, WMAQ, KSD, WHO, WOV, WDAF.

Pacific Network—The stations on the Pacific network are KGO, KPO, KFI, KGW, KOMO, KHQ, KFSD, KTAR.

The next three programs are as follows:

February 18 Heart Disease Morris Fishbein M.D.
February 25 Crippled Children W. W. Bauer M.D.
March 4 Cancer W. W. Bauer M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Plans for a Speakers' Bureau—Plans are now being made to establish a speakers' bureau for the Arkansas Medical Society, in accordance with action taken at a recent meeting of the council. Dr. Darmon A. Rhinehart, Little Rock, chairman, public relations committee is in charge of the arrangements, and it is believed that the bureau will be functioning before the next annual session in April. Societies wishing to use the facilities of the bureau are asked to communicate with Dr. Rhinehart.

Society News—The Fifth Council District Medical Society was addressed at Eldorado January 7, by Drs. George R. Livermore and J. H. Eugene Rosamond, Memphis, on diseases of the prostate and earache in children respectively. At a meeting of the Mississippi County Medical Society in Bluffville January 7, Drs. Lemly L. Hubener, Dyess, discussed 'The Choice of Obstetric Instruments and the Method of Application' and Floyd Webb, Bluffville, 'Middle Ear Infection'. Dr. Charles R. Rountree, Oklahoma City, addressed the Miller County Medical Society recently on 'Fractures In and Near the Elbow Joint'. The Benton County Medical Society was addressed January 9 by Dr. Guy Hodges, Rogers, on 'Bronchopneumonia in Childhood'.

CALIFORNIA

Society News—Dr. Stanley Cobb, Bullard professor of neuropathology, Harvard Medical School, Boston, discussed 'Epilepsy and the Causes of Convulsions' at a joint meeting of the Los Angeles Society of Neurology and Psychiatry and the internal medicine section of the Los Angeles County Medical Society, February 10.

Food Poisoning from Imported Antipasto—The California State Department of Health announces a recent outbreak of food poisoning traced to imported antipasto. The department states that this is the second outbreak of food poisoning

attributed to this product within the last few years. An effort is now being made to determine whether the infected product has been widely distributed over the state.

COLORADO

Society News—The Colorado Hospital Association will hold its annual meeting April 28-29 this year, instead of in the fall as in previous years. A symposium on disorders of the parathyroid gland was presented before the Medical Society of the City and County of Denver, February 4, by Drs. Thaddeus Sears, William C. Black, Kenneth D. A. Allen, Wilfred S. Dennis, Roy P. Forbes and William W. Haggart.

Annual Registration Due Before March 1—Every person licensed to practice any form of the healing art in Colorado is required by law to register annually before March 1 with the secretary-treasurer of the Board of Medical Examiners and to pay a fee of \$2 if a resident of Colorado or \$10 if a non-resident. Failure to pay this fee within the time stated automatically suspends the right of a licensee to practice while delinquent. If he nevertheless continues to practice he is subject to the penalties provided by law for practicing medicine without a license. Failure to pay this fee for three consecutive years results in the automatic cancellation of a delinquent practitioner's license to practice.

DISTRICT OF COLUMBIA

Annual Graduate Clinic—The fourth annual graduate clinic of George Washington University School of Medicine will be held at the University Hospital, February 29, with the following program:

Dr. Frederick A. Reuter, Analysis of Routine Examination of the External Genitalia.
Dr. Joseph Lavin Thompson, Unusual Case of Meningococcus Septicemia.
Drs. Paul T. Dickens and Charles S. White, Observations on Total Thyroidectomy for Congestive Heart Failure and Angina Pectoris.
Dr. Howard T. Kane, Obstetric Analgesia.
Dr. Walter Freeman, represented by Dr. Hyman D. Shapiro, Outpatient Treatment of General Paralysis of the Insane with Malaria.
Dr. Jacob Kotz, Treatment of Functional (Endocrine) Disorders in Females.
Dr. Daniel L. Borden, Emergency Use of Murphy Button.
Dr. Harry H. Donnelly, Acute Purulent Pericarditis in Infancy.
Dr. Radford Brown, Endometriosis.
Dr. Paul S. Putzki, Carcinoma of the Rectum.
Dr. Harry A. Davis, Use of Fluids in the Treatment of Shock.
Dr. Raymond W. Murray, Treatment of Dyspepsia.
Dr. Paul F. Dickens, Treatment of Nephritis.
Dr. William Leroy Dunn, Treatment of Angina Pectoris.
Dr. Howard T. Kane and staff, Use of Paraldehyde in Obstetrics.

GEORGIA

Society News—Dr. Calvin B. Stewart presented a paper on 'Cancer Prevention' before the Academy of Medicine, Atlanta, January 16. Dr. James J. Clark discussed 'Interlobar Lesions and Their Correct Diagnosis,' and Dr. Richard B. Wilson presented a case report of carcinomatosis of the meninges. All are from Atlanta. Speakers before the Fulton County Medical Society, February 6, included Dr. Leila A. Daughtry-Denmark, Atlanta, on 'A Study in Whooping Cough Immunization and Diagnosis'.

Personal—Dr. Charles W. Folsom, formerly health officer in Knox County, Ky., has been appointed to a similar position with the Walker-Catoosa County Health Department, succeeding Dr. Samuel P. Hall Jr., who resigned. Dr. Charles A. Greer was recently reelected mayor of Oglethorpe for the twentieth term. Dr. Robert Frank Cary, Monticello, has been elected health officer of Terrell County, with offices in Dawson. Dr. Henry Grady Callison has been named health commissioner of Augusta and Dr. William A. Mulhern chairman of the board.

ILLINOIS

New Buildings for Manteno State Hospital—As a part of an extensive building program at the Manteno State Hospital, Manteno, contracts have been let for twelve ward buildings, diagnostic building, hospital for the tuberculous, two hydrotherapy wards, mechanical building and two dormitories for employees. The total amount to be expended will be about \$3,700,000 with contracts calling for completion of the work by December 15. Most of the buildings which were erected under this program last year at a cost of \$1,900,000 are now occupied and include six ward buildings, hospital building, store building and laundry. A general kitchen was completed, as well as the installation of mechanical equipment. With the additions, the bed capacity of the hospital has been increased by 1,600.

Society News—At a meeting of the Adams County Medical Society in Quincy, February 10, Dr Frank Smithies Chicago, spoke on ulcerative lesions of the intestine—Dr Porter P Vinson, Rochester, Minn., discussed "The Newer Findings in Pulmonary Disease with the Use of the Bronchoscope" before the Peoria City Medical Society, February 4—At a meeting of the St Clair County Medical Society in Belleville, February 5, Dr Charles H Eyermann, St Louis, discussed "Allergy in General Practice," and Dr Rolland L Green, Peoria, president-elect, state medical society, February 6, in East St Louis, social aspects of medicine—Dr Joseph Brenemann, Chicago, addressed the Sangamon County Medical Society, February 6, in Springfield, on "Pneumonias of Childhood"—The Springfield Medical Club, Springfield will be addressed March 17 by Dr Anton J Carlson, Chicago, on "The Control of the Endocrine Glands"

Chicago

Meeting on Industrial Medicine—The Central States Society of Industrial Medicine and Surgery met jointly with the Chicago Medical Society, January 15 Speakers included

Dr John J Moohead New York Traumatic Surgery Trends
Dr George G Davis Problem of the Pneumoconoses in Industry
Dr Allan J Hruby Clinical Aspects of Pulmonary Fibrosis Produced by Dust Diseases
Dr Henry C Sweany Pathology of the Pneumoconoses
Dr Hollis E Potter, Roentgenologic Visualization of Lung Fibrosis Produced by Silicosis and Other Dusty Occupations
Daniel D Carmell assistant attorney general of Illinois The Legal Status of Occupational Diseases in Illinois
Dr Philip H Kreuscher The Role of the Medical Department of the Illinois State Industrial Commission in Connection with Occupational Disease

Society News—The Chicago Medical Society will be addressed, February 19, by Dr Wilburt C Davison, dean, Duke University School of Medicine Durham N C, on 'Brucellosis' Dr Williams McKim Marriott, dean, Washington University School of Medicine, St Louis, will speak on 'Hypoglycemic Reactions in Childhood,' and Dr Nathan B Van Etten, New York speaker, House of Delegates, American Medical Association 'Economic Problems of Interest to the Medical Profession' A symposium on syphilis was presented before the society, February 5, by Drs Harold A Rosenbaum, Oliver S Ormsby and George W Hall—Dr Owen H Wangenstein, Minneapolis, discussed "Intestinal Obstruction" before the Englewood branch of the Chicago Medical Society January 7

INDIANA

Personal—Dr Sherman S Frazier Angola has been appointed secretary of the Angola City Board of Health to succeed the late Dr P Norman Sutherland who held the position for more than twenty-five years—Dr Alva L Spinning, Covington, has been appointed health officer of Fountain County

Society News—Dr William R Cubbins, Chicago, discussed "Fractures of the Elbow and Knee Joints" before the Fort Wayne Medical Society, February 3—Dr Lindon Seed Chicago, discussed hyperthyroidism before the Montgomery County Medical Society in Crawfordsville, January 30—At a meeting of the Knox County Medical Society in Vincennes, January 21, Dr Warren W Hewins, Evansville spoke on prostatic disease and transurethral prostatectomy—Dr Thurman B Rice, Indianapolis, addressed the Jasper-Newton County Medical Society in Kentland January 31 on Health Fads—Dr Robert M Moore, Indianapolis, addressed the Tippecanoe County Medical Society, February 11, in Lafayette on diseases of the coronary arteries—Dr Henry F Beckman, Indianapolis, discussed "Toxemia of Late Pregnancy" before the Northeastern Indiana Academy of Medicine, January 30

IOWA

Personal—Dr Mark C Wheelock, formerly on the staff of the state hospital at Cherokee has been named assistant superintendent of the state hospital in Mount Pleasant—Dr Wayne J Foster, Cedar Rapids, has been appointed to the board of control in athletics at the University of Iowa Dr Foster is a graduate of the State University of Iowa College of Medicine Iowa City, and a former athlete

Society News—Dr Edward A Schumann Philadelphia discussed "Ectopic Pregnancy" before the Des Moines Academy of Medicine and the Polk County Medical Society, February 7—The Linn County Medical Society will be addressed in Cedar Rapids, March 12, by Drs William E Brown on "Physiology of the Uterus in Labor" Charles Sumner Day "Pathology of the Uterus in Labor" James Stuart McQuiston, "Movement Disorders and Various Types of Gaits" and Benjamin F Wolverton, "Practical Application of Electrocardiography" All speakers are from Cedar Rapids

KANSAS

New Medical Bureau—The Medical Credit Service Bureau of the Sedgwick County Medical Society was opened February 1, with Mr Harry A McGinley as manager At present only members of the society will be entitled to make use of the bureau, although later the facilities may be extended to members of the Wichita Dental Society and local hospitals

Society News—The Wyandotte County Medical Society was addressed, February 4, by Drs Harold V Holter on "Treatment of Puerperal Sepsis" and Eldon S Miller, 'Carotemia' Dr Harry R Wahl conducted a pathologic conference Speakers, January 20 were Drs Maurice A Walker and Harold L Garney on 'Surgery and Diabetes' and "Pelvic Inflammation and Sedimentation" respectively A pathologic conference was also conducted by Dr Wahl—At a meeting of the Saline County Medical Society and the Golden Belt Medical Society in Salina, January 9, speakers were Drs Maurice Snyder, Salina, on "Simple Achlorhydric Anemia" Lucien R Pyle, Topeka, "Common Pathological Conditions of Pregnancy", Charles C Dennie, Kansas City, "Heat Treatment in Syphilis" and Harry L Smith, Rochester, Minn., "Syncope of Patients with Hypersensitive Carotid Reflexes" Syncopal Attacks Reproduced by Pressure on the Carotid Sinus"

KENTUCKY

Outbreak of Meningitis—Schools in five districts of Harlan County were closed by health authorities, February 7, when several deaths and more than twenty cases were reported in an outbreak of meningitis Cumberland, Lynch, Benham, Walhins and Shields were placed under quarantine As precautionary measures, health officers posted rules prohibiting more than three persons in stores at a time, closed all theaters and canceled all public gatherings, the Chicago Tribune reported

Bills Introduced—H 487 proposes to enact a new pharmacy practice act Among other things, the bill proposes to prohibit the sale, except on the prescription of a licensed physician dentist or veterinarian of hormones (synthetic or otherwise) barbital sulfonethylmethane (trional), sulfonmethane (sulfonal), diethylsulfon, diethylmethane (tetralon) carbromal, paraldehyde chloral or chloral hydrate, chlorbutanol, all serums and antitoxins and the following emmenagogues or abortives: tansy, pennyroyal, rue, savin ergot and cotton root H 535 proposes to make incurable insanity on the part of either spouse a ground for divorce H 574 proposes to enact a new pharmacy practice act Among other things the bill proposes to prohibit the sale, except on the prescription of a legally qualified physician, of tansy, pennyroyal, rue, savin, ergot or cotton root

MARYLAND

Dr McCollum Awarded Medal—Elmer V McCollum, Ph D, professor of biochemistry and head of the department Johns Hopkins University School of Hygiene and Public Health, Baltimore, has been presented with the Callahan Memorial Award by the Ohio State Dental Society The award is a gold medal given each year to a person who has made a contribution to dental science which is of very exceptional value" Dr McCollum's research has dealt principally with nutrition

Cancer Clinics—A series of clinics on cancer planned by the Medical and Surgical Faculty of Maryland, opened at the University Hospital, Baltimore January 15 The clinics which are designed to acquaint practicing physicians with the latest developments in the prevention and diagnosis of cancer will be offered at the City Hospital, March 10 on surgical and radiation treatment of cancer April 29, in conjunction with the annual meeting of the faculty, on the cancer problem, May 21 at Johns Hopkins Hospital on surgical pathology of cancer A clinic was held in Salisbury, February 5, and one is planned for Cumberland, April 3

MASSACHUSETTS

New Health Commissioner for Boston—Dr William Basil Keeler, medical inspector for the South Boston health unit has been appointed health commissioner of Boston, succeeding the late Dr Francis X Mahoney Dr Keeler graduated from Tufts College Medical School in 1903 According to the *New England Journal of Medicine*, Dr Keeler was assistant to Dr Charles F Wilinsky deputy commissioner of health, with the assignment as medical inspector for the South Boston health unit

Psychiatric Awards—The New England Society of Psychiatry at its next spring meeting will make two awards, one of \$50 and one of \$25, to the writers of the best papers completed or published during the calendar year 1935 embodying

research in psychiatry by a younger worker. Physicians, psychologists, social workers or others are eligible and membership in the society is not a requisite. Writers who have once received an award are not again eligible. Seasoned writers, senior physicians or heads of departments in which there are junior workers while not inevitably excluded, will not generally be regarded as eligible for the awards. The work on which the papers are based should preferably have been done in New England or by workers now living in New England. Copies of articles or marked copies of journals in which the articles appeared should be sent before March 1 to the secretary of the society, Dr Harlan L. Paine, North Grafton.

Society News—Clarence W. Muehlberger, Ph.D., Chicago, gave a lecture at Harvard Medical School, February 6, on 'Some Newer Techniques in Medicolegal Investigation'. At the annual meeting of the New England Ophthalmological Society, January 21, Dr. William D. Rowland discussed "Simple Technique for Plotting Diplopia," and Dr. Francis Heed Adler, Philadelphia presented a paper entitled "Interpretation of the Different Forms of Tuberculosis of the Uveal Tract."—Dr. L. Emmet Holt Jr., associate professor of pediatrics, Johns Hopkins University School of Medicine, Baltimore, addressed the William Harvey Society at Tufts Medical School, February 13, on "Significance of Fats in Nutrition." Dr. Hiram Houston Merritt addressed the society, January 10, on Syphilis of the Nervous System.—Edgar Allen, Ph.D., New Haven, Conn., discussed "Reactions to Ovarian Hormones" before the Harvard Medical Society, January 28, in Boston.

Dr. Hunt to Retire from Harvard—The retirement of Dr. Reid Hunt, since 1913 professor of pharmacology at Harvard Medical School, Boston, has been announced, effective in September. Dr. Hunt is 65 years of age. He graduated from the University of Maryland School of Medicine in 1896 and after two years as tutor in physiology at the College of Physicians and Surgeons (Columbia), New York, served at Johns Hopkins University School of Medicine until 1903 as associate and as associate professor of pharmacology. He was chief of the division and professor of pharmacology of the U. S. Public Health Service from 1904 until 1913. In 1923 he was visiting professor to Peking Union Medical College and from 1920 to 1930 president of the U. S. Pharmacopoeial Convention. He was chairman of the Section on Pharmacology and Therapeutics of the American Medical Association in 1908-1909, a member of the House of Delegates in 1911-1912 and has been a member of the Council on Pharmacy and Chemistry of the Association since its inception in 1905. He succeeded Dr. George H. Simmons as chairman of the Council in 1927. His investigations have been of the first order and have found ready recognition both in America and in Europe and he has contributed much to the literature on his specialty. Dr. Hunt's plans for the future were not announced.

MICHIGAN

Industrial Hygiene Laboratories—The Industrial Hygiene Laboratories of the Chrysler Corporation, Detroit, began operation January 1 under the direction of Dr. Stuart F. Meek, Detroit, as industrial hygienist and Gordon C. Harold as chemist. These laboratories located at the Dodge main plant of the Chrysler Corporation are devoted to the study of occupational diseases and their sources, together with other agencies and conditions of work leading to industrial health hazards. They have been planned under the direction of Dr. Carey P. McCord, Cincinnati, who remains associated in the capacity of consultant.

Personal—Dr. Irmel W. Brown has been named director of the health department of Kalamazoo, succeeding Dr. John L. Lavan, resigned.—An enlarged photograph of an oil painting of the late Dr. Charles Godwin Jennings has been presented to the Wayne County Medical Society by associates and friends of Dr. Jennings.—Dr. William H. Pickett, Saginaw, has resigned as health officer of Saginaw County to accept a similar position in Florida.—Dr. Howard H. Cummings has been appointed assistant director of the postgraduate department, University of Michigan Medical School, Ann Arbor; he will serve on a part time basis, it is reported.

Society News—Dr. Henry W. Meyerding, Rochester, Minn., addressed the Gogebic County Medical Society recently on "Volkmann's Ischemic Contracture as a Complication of Fractures of the Elbow."—The Wayne County Medical Society was addressed December 16 in Detroit, by Mr. John D. Dingell, Detroit member of the U. S. House of Representatives and Dr. Roscoe L. Sensemich, South Bend, Ind., on the political and social aspects of the practice of medicine. The society was addressed January 6 by Dr. Walter M. Simpson,

Dayton, Ohio, on 'Artificial Fever Therapy' and Mr. Charles F. Kettering, director, General Motors Research Laboratories, 'The Engineering Aspects of the Apparatus Used for Artificial Fever Production'.

MINNESOTA

The Jackson Lecture—The third annual Clarence Martin Jackson Lecture was given by Dr. Russell L. Haden, Cleveland, February 5, at the University of Minnesota School of Medicine. His subject was 'The Human Red Blood Cell.' The Jackson lecture was established by Phi Beta Pi Medical Fraternity in honor of Dr. Jackson, who is head of the department of anatomy at the medical school.

Personal—Mr. R. R. Rosell, formerly field representative of the National Food Bureau, has been appointed assistant to the secretary of the Minnesota State Medical Association. Dr. Edward A. Meyerding, St. Paul. Mr. Rosell will keep in touch with negotiations in all parts of the state with county commissioners and relief officers in the conduct of medical care for the indigent and unemployed.—Dr. James C. Masson has been appointed chief of the surgical staff of the Mayo Clinic, succeeding the late Dr. Edward Starr Judd.

MISSISSIPPI

Bills Introduced—S. 105 proposes to create a state board of cosmetic therapy or beauty culture and to regulate the practice of cosmetic therapy or beauty culture. Among other things, such practitioners are to be permitted to remove superfluous hair. S. 110 proposes to enact a podiatry practice act and to authorize the state board of medical examiners to examine and license persons applying for licenses to practice podiatry. Such practitioners are to be authorized to diagnose and treat medically, mechanically, electrically, and surgically minor ailments of the human foot such as corns, calluses, warts, ingrowing and abnormal nails, bunions and similar conditions, and they are to be permitted to use such mechanical appliances as may be deemed necessary for the relief or cure of such ailments, except that they are to be denied the right to amputate the foot or toes, or to use anesthetics other than local. They are specifically prohibited from treating diseases and conditions of the feet produced by kidney, heart or other systemic diseases, unless they do so under the direction of a regularly licensed physician.

MISSOURI

Society Favors Abolishing Marine Hospital—In a resolution adopted January 28 the St. Louis Medical Society expressed its opposition to the expenditure of funds for the rebuilding of the local marine hospital and recommended its abolishment. The resolution explained that since the policy is to build marine hospitals where private hospital care is less economical, the society believes private hospitals in St. Louis could care for patients receiving treatment by the U. S. Public Health Service at less cost than a government hospital.

Cancer Control Meetings—The Holt County Medical Society and the Mound City chapter of the Twentieth Century Club sponsored a cancer control meeting at Mound City, January 7. Speakers included Drs. Henry J. Ravold and Harold E. Petersen. The St. Louis County Medical Society held a similar meeting in Clayton, January 22. Dr. Richard S. Weiss, St. Louis, discussed Precancerous Dermatoses and Dr. Louis H. Jorstad, St. Louis, Cancer of the Lip and Buccal Cavity, Prevention and Therapy. The cancer committee of the state medical association furnished the speakers for these meetings.

NEW YORK

Bills Introduced—S. 829 proposes to grant to charitable hospitals and to city and municipal hospitals treating persons injured through the negligence of others, liens on all rights of actions, claims, judgments or compromises accruing to injured persons by reason of their injuries. S. 764 to amend the law authorizing the formation of nonprofit hospital service corporations to render hospital services to their subscribers or members and to exempt such corporations from the provisions of the insurance laws proposes to extend the provisions of that law to a nonprofit service indemnifying corporation for the purpose of establishing, maintaining and operating a nonprofit service plan whereby policy holders shall be indemnified for amounts paid out or agreed to be paid out by them for medical and surgical care and treatment, nursing care and hospital care. S. 765 and A. 920 propose to authorize hospitals, supported in whole or in part from public funds or exempt from taxation, to employ physicians under a contract or salary arrangement for the treatment and care of patients who are a public charge. In all other cases the bill proposes, medical diagnosis and/or

treatment must be rendered to patients independently of other hospital charges and under contractual relationship between the patient and the physician. A 864 and A 865 propose to establish a board of chiropractic examiners and to regulate the practice of chiropractic, defined as "the adjusting by hand only of the articulations of the human vertebral column where misalignment or subluxations appear," and excluding "operative surgery, prescription or use of drugs or medicine, or the practice of obstetrics, except that the X-ray may be used solely for purposes of examination."

Pneumonia Control Program—A special program for the control of pneumonia was inaugurated January 1 by the state department of health in cooperation with the Medical Society of the State of New York, the State Association of Public Health Laboratories, the Commonwealth Fund and the Metropolitan Life Insurance Company. The division of laboratories and research distributed Dec. 30, 1935, a supply of concentrated type I antipneumococcus serum to seventy supply stations throughout the state. Under the direction of Dr. Edward S. Rogers, formerly of the staff of Massachusetts General Hospital, a special unit has been added to the division of communicable diseases which will devote its efforts to cooperation with the medical profession and evaluation of the results of the campaign. Facilities for typing sputum by the rapid Neufeld method are now available in seventy-seven approved laboratories throughout the state and it is planned to extend this service to place typing facilities within reasonable access of physicians in all parts of the state. The state medical society through its committee on public health and medical education of which Dr. Thomas P. Farmer, Syracuse, is chairman, is sponsoring special meetings and conferences of physicians devoted to the various aspects of pneumonia. Dr. Russell L. Cecil, New York, is chairman of a subcommittee on pneumonia directly in charge of this work. In addition, a number of official and volunteer nursing organizations are considering ways to provide adequate nursing service. As part of the campaign, Governor Lehmann issued a proclamation January 15 urging citizens to join in an effort to reduce the number of pneumonia cases and deaths "by disseminating knowledge of prevention through simple health rules and prompt action in securing early diagnosis and treatment where pneumonia is suspected."

New York City

Personal—Dr. Isidore H. Goldberger was not elected president of the Bronx County Medical Society, as noted in THE JOURNAL, January 4, page 49, but of another society with a similar name.

Fifth Harvey Lecture—Dr. John Farquhar Fulton, Sterling professor of physiology, Yale University, New Haven, will deliver the fifth Harvey Lecture at the Academy of Medicine, February 20. His subject will be "Interrelation of Cerebrum and Cerebellum in the Regulation of Somatic and Automatic Functions."

Tuberculosis Sanatorium Conference—A clinical session on chronic pulmonary diseases was held at Cornell University Medical College, February 5 by the Tuberculosis Sanatorium Conference of Metropolitan New York, under the auspices of the New York Tuberculosis and Health Association. Speakers, all of the staff of Seaview Hospital, Staten Island, included:

- Drs. David Ulmar and Oscar Auerbach: Clinical Course and Post mortem Examination (presentation of cases)
- Drs. David Reisner and Iekoussiel C. Tchertkoff: Cystic Disease of the Lungs
- Dr. Henry K. Taylor \ Ray: Diagnosis of Pathology in the Larynx and Trachea
- Drs. George G. Ornstein and Pol N. Coryllos: Management of Bilateral Pulmonary Tuberculosis

Dr. Coryllos also spoke on "Closed Pneumolysis Indications and Management."

Alumni Day—Alumni Day of the New York University College of Medicine will be held February 22. The program will consist of papers and laboratory demonstrations, exhibits and ward rounds in Bellevue Hospital. Luncheon will be served at the college and the annual alumni dinner will be at the Park Central Hotel. Dr. John H. Wyckoff, dean, will give the address of welcome, and Dr. Walter Lester Carr, president of the alumni association, opening remarks. Others on the program will include:

- Dr. Irving Graef: Change of Structure in the Kidney as Related to Certain Changes in Function
- Dr. George B. Wallace: Action of the Mercurial Diuretics
- Dr. Meredith F. Campbell: Pyuria in Children
- Dr. Albert A. Epstein: Nephrosis
- Dr. Edward B. Gresser: Eye Changes in Nephritis
- Dr. Samuel Standard: Salt and Water Metabolism
- Dr. Homer W. Smith: The Biology of Excretion
- Dr. William Goldring: Urinary Findings in Renal Disease

Dr. Isaac Seth Hirsch and Robert Chambers, Ph.D., will participate in the demonstrations.

Record Low Death Rate—New York's mortality rate in 1935 was 9.9 per thousand of population, the lowest ever registered, according to the annual report of the health commissioner, Dr. John L. Rice. Four other death rates reported were said to be the lowest the city has had: infant mortality, 47.6 per thousand births; diphtheria, 0.9 per hundred thousand of population; typhoid, 0.5 per hundred thousand; and pulmonary tuberculosis, 52.2 per hundred thousand. The total number of deaths was 75,057. There were only 66 deaths from diphtheria in comparison with 210 in 1932, 37 from typhoid compared with 64 in 1932, and 3,969 from tuberculosis compared with 3,997 in 1932. Deaths from pneumonia have dropped from 9,245 in 1931 to 6,381 in 1935, appendicitis from 1,149 in 1933 to 921 in 1935. Suicides decreased from 1,595 in 1932, the highest point in the last ten years, to 1,147 last year. There were 2,134 cases of poliomyelitis in 1935, about half the number in the epidemic of 1931 and less than one fourth the number in the epidemic of 1916, the mortality rate was less than 5 per cent, much lower than in previous outbreaks. The birth rate was 13.2 per thousand of population, the lowest birth rate ever recorded in the city.

OHIO

Lectures on the Filtrable Viruses—Dr. Thomas M. Rivers of the Rockefeller Institute for Medical Research, New York, will deliver the Rachford Memorial Lectures at the University of Cincinnati College of Medicine February 27-28. His subject will be "The Filtrable Viruses."

Society News—Dr. Edward William Alton Ochsner, New Orleans, addressed the Academy of Medicine of Cincinnati, February 4, on "Treatment of Ileus Occurring Postoperatively and in Association with Peritonitis." Dr. John J. Shea, Memphis, Tenn., addressed a joint meeting with the Cincinnati Dental Society, February 11, on "Management of Fractures of the Superior Maxilla Extending Into the Alveolar Process."

OKLAHOMA

Society News—Speakers before the Tulsa County Medical Society, January 13, were Drs. E. Rankin Denny, on "Diabetic Coma," Gregory A. Wall, "Oblique Inguinal Hernia," and David V. Hudson, "Results in the Treatment of Syphilis in the Clinic." Dr. Leon H. Stuart addressed the society, January 27, on "Roentgen-Ray Treatment of Infections."

PENNSYLVANIA

Personal—At a meeting of the Lawrence County Medical Society in New Castle February 6, Dr. John P. Griffith, Pittsburgh, discussed differential diagnosis of acute conditions of the abdomen. Dr. James L. Gilmore, Pittsburgh, addressed the Fayette County Medical Society at Uniontown, February 6, on "Diagnosis and Treatment of Obstetric Problems." Dr. Hamlin C. Eaton has resigned as clinical director of the Warren State Hospital, Warren, to accept a similar position at the Polk State School, Polk. Dr. Eaton was secretary of the Warren County Medical Society for seven years.

Philadelphia

Changes in City Health Department—Dr. William C. Hunsicker has been appointed director of health of Philadelphia and Dr. Alfred F. Allman, assistant director. Dr. Hunsicker graduated from Hahnemann in 1895 and had been a member of the state senate for a number of years resigning to accept the new position. Dr. Allman, a graduate of Jefferson Medical College in 1895, had previously been associated with the health department and at one time served on the city council. Dr. Martha Tracy, dean of the Woman's Medical College of Pennsylvania and Dr. Joseph C. Doane, medical director of the Jewish Hospital, have been appointed to the board of health to succeed Dr. James M. Anders, who resigned, and the late Dr. Ellwood R. Kirby.

"Professional Day" Celebrated—Dr. William B. Castle, associate professor of medicine, Harvard Medical School, Boston, received the Procter Award and new research laboratories were dedicated at the Philadelphia College of Pharmacy and Science as features of "Professional Day," January 31. Dr. Castle made an address on "New Developments in Products for the Treatment of Pernicious Anemia," E. Fullerton Cook, Ph.D., chairman of the U. S. P. Committee of Revision, discussed the new Pharmacopeia, Adley B. Nichols, B.Sc., secretary of the Committee of Revision of the National Formulary, discussed the Formulary, and Dr. Horatio C. Wood, Jr., professor of pharmacology at the school, the use of official medicines in medical practice. The new laboratories are a memorial to Prof. Joseph Price Remington presented to the school by Mr. Josiah K. Lilly and Mr. Eli Lilly, Indianapolis.

graduates of 1882 and 1907 respectively. An afternoon program was presented with the following members of the faculty as speakers: Arthur Osol, B Sc, on "Newer Chemical Aspects of the Pharmacopoeia", Louis Gershenfeld, P D, "Official Biological Products and the Official Preparations for Parenteral Administration", Marim S. Dunn, Ph D, "Official Requirements for Vegetable and Animal Drugs", Arno Viehoever, F C, "Biological Methods for Standardizing Cathartics," and Ivor Griffith, Ph M, "The Pharmacy of the U S Pharmacopoeia."

SOUTH CAROLINA

Bills Introduced—H 1500 proposes to require as a condition precedent to the issuance of a license to wed that both parties to the proposed marriage present a certificate from a physician that they are physically and mentally fit to contract matrimony. S 1112 proposes to require the board of regents for the state hospital at Columbia to establish a department for the restraint and care of inebriates defined to be persons habitually so addicted to alcoholic drinks or the use of narcotic drugs as to be proper subjects for restraint, care and treatment. Probate judges are to be authorized to commit, on petition of interested persons, persons whom they determine to be inebriates to this department for restraint and treatment. S 1119 proposes to authorize the city council of any municipal corporation of more than 5,000 and less than 10,000 inhabitants which has acquired, constructed or caused to be constructed a hospital to establish a city hospital commission to operate and manage the hospital.

TENNESSEE

University News—Dr Henry E. Sigerist, William H. Welch professor of the history of medicine, Johns Hopkins University School of Medicine, Baltimore, lectured at Vanderbilt University School of Medicine, Nashville, in December on "Medicine in the Renaissance," "Medical Organizations in Europe" and "Life and Work of Louis Pasteur and Robert Koch."

Society News—Dr George D. Boone, Paris, among others, addressed the Carroll, Henry and Weakley Counties Medical Society in December on "Collapse Therapy in Tuberculosis." Drs. Nicholas S. Walker, Dyersburg, and Richard C. Newkirk, Tiptonville, among others, addressed the Dyer, Lake and Crockett Counties Medical Society January 1, on "Perinicious Vomiting of Pregnancy" and "Rachitic Pelvis" respectively. At a meeting of the Robertson County Medical Society in La Follette in December Drs. William P. Stone and Ernest W. Adair, Springfield, spoke on blood dyscrasias and on treatment of varicose veins. The Memphis Society of Ophthalmology and Otolaryngology held its annual "Clinical Day" in December in honor of Dr. Edward C. Ellett. The program consisted of demonstrations of operative procedures followed by a banquet at the university club in the evening at which Dr. Ellett made an address.

VIRGINIA

Bills Introduced—S 151 and H 234 to amend the law granting liens to hospitals treating persons injured through the negligence of other persons, on all rights of action, claims, judgments and compromises accruing to the injured persons by reason of their injuries, proposes to grant these liens also to physicians and nurses.

WEST VIRGINIA

State Laboratory Limits Free Work—The hygienic laboratory of the West Virginia Department of Health will henceforth limit its free work under a ruling of the Public Health Council, effective January 1, to charity cases properly certified by both patient and physician work of health agencies and state institutions, and work of private physicians of a public health nature. No specimen will be accepted for diagnosis except from a physician, and no reports will be given out except to physicians. It is believed that this policy of turning away from the state laboratory to private laboratories all specimens for which payment should be made will stimulate the establishment of more private laboratories meeting standard requirements. Specimens that should be sent to private laboratories include blood specimens for the purpose of obtaining licenses as in the case of barbers and beauticians who are required by law to present the report of a blood test annually. The only exception to this is made when the applicant and the examining physician sign a statement that the former is unable to pay for the laboratory examination. Since the ruling states that any specimen is considered of private

nature when a fee is charged for laboratory diagnosis, specimens from patients who are able to pay are to be sent to private laboratories, except when they are for the specific purpose of diagnosis, treatment and control of communicable diseases that affect the health of the public.

PHILIPPINE ISLANDS

Society News—A League of Medical Associations of the Philippines was recently formed by the Philippine Islands Medical Association, the Colegio Medico-Farmacaceutico de Filipinas, the Philippine Federation of Private Practitioners and the Philippine Public Health Association. Dr. Jose Fabella, commissioner of health and welfare, was elected chairman of the council of the league and Dr. Antonio S. Fernando, secretary. The league planned a national congress to consider health problems of the new commonwealth to take place early this year. At a recent meeting of the Manila Medical Society speakers were Drs. Alfredo Pio de Roda on "Action of Bacteriophage in Various Types of Staphylococci" and Eusebio Y. Garcia, on "Possibility of Predetermination and Control of Sex in Man by Electrical Methods."

GENERAL

Heart Journal Becomes Monthly Publication—Beginning with the January issue, the *American Heart Journal* will be published monthly instead of bimonthly as heretofore. The announcement was made on the tenth anniversary of the publication of the journal.

Orthopedic Examination—The next examination of the American Board of Orthopaedic Surgery will be held at Kansas City May 11. Applications to take the examination should be filed with the secretary, Dr. Fremont A. Chandler, 180 North Michigan Avenue, Chicago, on or before April 1.

Physical Therapy Meetings—The fifteenth annual scientific and clinical session of the American Congress of Physical Therapy will be held at the Waldorf-Astoria, New York, September 7-11. The midwestern section will hold its meeting at the Mayo Clinic, Rochester, Minn., March 4-5 and the southern section in New Orleans, March 23.

Society News—The twenty-second annual observance of National Negro Health Week sponsored by the U. S. Public Health Service, will be March 29 to April 5. The special objective for 1936 is "The Child and the School as Factors in Community Health." The American Laryngological, Rhinological and Otolological Society will hold its annual meeting in Denver, May 18-20.

News of Epidemics—Two deaths from meningitis occurred in January at the Soldiers' Home Hospital, Sandusky, Ohio. A case in Topeka, Lawrence County, Miss., caused the county health officer to quarantine the community; it was reported January 25. A boarding house in Caretta, W. Va., was placed under quarantine January 10, after an inmate had become ill of meningitis. Nineteen cases and five deaths were reported in New York City for the week ended January 25. Wells-ville, N. Y., was placed under quarantine in January after an outbreak of scarlet fever involving thirty-six cases and two deaths up to January 13. Schools were closed in two communities in North Union township in Pennsylvania the week of January 13 because of an epidemic of scarlet fever; eighteen cases were reported at that time.

Medical Bills in Congress—*Change in Status*. H. R. 10919 has been reported to the House, making appropriations for the Treasury and Post Office Departments for the fiscal year ending June 30, 1937. For the Bureau of Narcotics, an appropriation of \$1,275,000 is proposed. For the United States Public Health Service, the following appropriations among others are proposed: \$8,000,000 to assist states, counties, health districts and other political subdivisions of the states in establishing and maintaining adequate public health services including the training of personnel for state and local health work; \$1,155,160 for investigations of diseases and sanitation; \$64,000 for maintaining the National Institute of Health; \$5,870,000 for the pay of personnel and maintenance of hospitals; \$663,220 for the Division of Mental Hygiene, including the maintenance and operation of the Narcotic Farm, Lexington, Ky. The bill proposes that on and after July 1, 1936, the Narcotic Farm at Lexington, Ky., shall be known as the United States Public Health Service Hospital, Lexington, Ky. *Bills Introduced*. H. R. 10547 introduced by Representative Carmichael, Alabama, proposes to increase the lump-sum payment made under the federal employees' compensation act for death or permanent total or permanent partial disability suffered prior to Feb. 12, 1927. H. R. 10851, introduced by Representative Mahon, Texas,

proposes to authorize \$1,050,000 to erect a 300 bed hospital in west Texas for veterans H R 10933, introduced by Representative Stefan, Nebraska, and H R 10984 introduced by Representative Dirksen, Illinois, propose to make it unlawful to sell certain spirits containing alcohol produced from materials other than cereal grains

FOREIGN

Society News—The ninth French Congress of Stomatology will be held in Paris, October 5-10, under the presidency of Dr A Pont, Lyons Information may be obtained from the secretary general, Dr M Dechaume, 182 rue de Rivoli, Paris —Dr M E Binet, Vichy, France, is in the United States to invite physicians to attend an International Congress on Hepatic Deficiency, to be held in Vichy, Sept 16-18, 1937, under the presidency of Prof Maurice Loeper, professor of clinical medicine, University of Paris—The International Congress for Experimental Cytology will be held in Copenhagen, probably during August Members and others who may be interested are requested to submit to the committee suggestions for subjects to be dealt with in symposiums Those who have preferences as to the exact date are asked to communicate immediately with Dr Harald J C Okkels University of Copenhagen, secretary of the local committee —The seventh International Genetics Congress will be held in Moscow in 1937 definite dates are yet to be selected—The Sixth International Congress of Physical Medicine will meet in London, May 12-16 The congress has been divided into six sections kinesitherapy, physical education, hydrotherapy and climatotherapy electrotherapy, actinotherapy, radiotherapy and radium therapy Subjects for discussion are in three groups, according to an announcement physiologic and biologic study of physical agents, clinical indications for physical treatment and benefits and proper use of exercise in the healthy and a comparative inquiry into the teaching of physical medicine in different countries The secretary is Dr Albert Eidmow, 4 Upper Wimpole Street, London, W 1—The one hundred and fourth annual meeting of the British Medical Association will be held at Oxford, July 17-24, under the presidency of Sir James W Barrett, Melbourne, Australia

Government Services

Announcement of Wellcome Prize for 1936

The Wellcome Prize will be awarded this year for the best paper on the subject "Importance of Coordinating the Military and Naval Medical Service with the Civilian Medical Profession" The prize is awarded by the Association of Military Surgeons of the United States

Dr DeWitt Appointed Assistant to Surgeon General

Col Wallace DeWitt has been appointed assistant to the surgeon general of the U S Army, Major Gen Charles R Reynolds, with the rank of brigadier general, succeeding Brig Gen Matthew Delaney, who retired November 30 Colonel DeWitt is 57 years of age and a graduate of the University of Pennsylvania School of Medicine, class of 1900 The following year he became an assistant surgeon in the U S Army, advancing through the grades until 1927, when he was promoted to colonel in the regular army He has been stationed at various posts through the United States and the Philippine Islands in various capacities, while his recent years have been spent as commanding officer of the Station Hospital, Fort Sam Houston, from 1921 to 1927, and of the Letterman General Hospital 1927-1931 When relieved of this duty he became professor of military hygiene and post surgeon at the U S Military Academy, West Point, N Y He was assigned to the Army Medical Center in Washington, July 9, 1935

Tuberculosis in Government Dairy Herd

An outbreak of tuberculosis in a herd of dairy cattle at the federal experiment station at Beltsville Md is reported by the Department of Agriculture Eighty-two reactors to the tuberculin test and eleven 'suspects' were revealed in a test made January 16 In the last previous test in October, one reactor appeared In accordance with the policy of the department the affected animals are being slaughtered and subjected to postmortem examination Officials were at a loss to explain

the sudden and extensive outbreak, a study is now being made to determine whether a virulent strain of the bovine organism gained access to feed or water The herd has been in an accredited status for eighteen years and has been maintained almost entirely by replacements raised on the farm No danger to other herds is involved, the department announced since all cattle that have outlived their usefulness for experimentation are slaughtered None are disposed of for dairy or breeding purposes

Annual Report of Veterans' Administration

During the fiscal year ended June 30, 1935, the Veterans' Administration hospitalized 153,018 patients, of whom 42,984 remained in hospitals at the end of the year, an increase of 7 per cent over the previous year Of the number still hospitalized, 55 per cent were being treated for neuropsychiatric diseases 12 per cent for tuberculosis and 33 per cent for general medical and surgical conditions There were 106,897 admissions, about 88 per cent of which were for non-service-connected disabilities This number is an increase of 67 per cent over 1934 but is 28 per cent less than the peak of 148,662 in 1932 Of the admissions, 10,387 were for observation or treatment of tuberculosis, 7,539 for psychotic or mental diseases, 9,680 for other neurologic disorders and 79,291 for general medical and surgical conditions

Deaths in hospitals totaled 7,253, or 7 per cent of the discharges, which amounted to 102,473 The previous year there were 5,334, which were 9 per cent of the discharges Of the deaths, 4,340, or 59.84 per cent occurred among patients under treatment for general diseases 1,885, or 25.57 per cent, for pulmonary tuberculosis, and 1,058, or 14.59 per cent, for neuro-psychiatric diseases

Since March 1919, when hospital facilities were first authorized for veterans of the World War, there have been 1,448,421 admissions to hospitals, the administration reported Since June 1924, when hospitalization was first authorized for all veterans without regard to the origin of their disabilities, 677,394, or 66 per cent of all admissions, have been for disabilities not connected with the service

The administration reported 9,323 veterans under domiciliary care June 30, 1935, of this number 80 per cent were veterans of the World War with an average age of 43 During the year there were 8,656 admissions for domiciliary care 85 per cent of them for non-service connected disabilities From these facilities 10,612 veterans were discharged after an average of six and a half months of domiciliary care

At the end of the year under report the Veterans' Administration was operating hospital facilities at eighty locations in forty-three states, with a total of 44,793 beds, there were 20,073 beds available for domiciliary care, a decrease of 3,474 from the number of the previous year Since the end of the fiscal year, Congress has appropriated \$21,250,000 for 12,116 more beds to be available within three years This addition will make a total of 55,858 beds in government facilities for hospitalization of veterans, not including 21,216 for domiciliary care In addition, the administrator of veterans affairs was authorized to submit estimates for the following new construction 500 bed neuropsychiatric hospital in Tennessee or Alabama 350 bed general hospital in or near Detroit, 100 bed general hospital near White River Junction, Vt, and a treatment station of twenty-five beds with space for a regional office at Reno Nev

Actual net disbursements for all purposes for the activities under the jurisdiction of the administration amounted to \$618,522,341.50

The report lays emphasis on opportunities extended to the medical personnel for training and advancement in the specialties of medicine Graduate courses have been provided since 1928 at the facility at Washington, D C, and until recently at Palo Alto, Calif In addition graduate study at civilian medical centers has been authorized, 455 physicians having had the benefit of this study Special courses in pathology, roentgenology, operative surgery, urology, electrocardiography and other subjects have been given at the facilities During the fiscal year 1935 an allergy clinic was established at Aspinwall Pa, which provides instruction for physicians and a laboratory for the preparation of allergens At Hines Ill a cancer service of 255 beds is maintained with equipment for research and treatment including 3 Gm of radium and two high voltage x-ray machines Five auxiliary cancer clinics have been established to take care of the increased cancer load among veterans At Dayton, Ohio, research is being conducted in the use of artificial fever in the management of arthritis, dementia paralytica and other forms of neurosyphilis

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan 11 1936

The Medical Profession and Voluntary Euthanasia

The movement of the Voluntary Euthanasia Legalization Society to make legal the terminating of painful incurable disease by the physician at the request of the patient has received influential support from both the profession and the public, but it has also excited much opposition. The medical journals have devoted editorials to the subject but they have refrained from committing themselves to support or opposition. The medical profession has begun to react to the proposal in the correspondence columns and so far there is more opposition than support. In the *British Medical Journal* Dr R. A. Fleming, consulting physician to the Royal Infirmary and physician to the Royal Hospital for Incurables, Edinburgh, describes the lives of cancer patients in the hospital as by no means dull, valueless or so miserable that they would welcome release. He always taught his students that pain should be soothed by drugs. To this communication Dr Killick Millard, founder of the movement, replies that voluntary euthanasia is not intended for the many patients with incurable disease who do not suffer pain and are happy and cheerful, but only for the comparatively few who are distressing, though in the aggregate the number is considerable and quite sufficient to justify the proposed legislation.

In the *Lancet* two surgeons take a different line, pointing out the value of surgical alternatives to euthanasia. Mr A. S. Blundell Bankart, an orthopedic surgeon asks whether the members of the society are aware that no patient need suffer intolerable pain from any local disease situated below the segmental level at which bilateral chordotomy can be done—the fifth cervical segment of the spinal cord. It is true that the operation might prove fatal, but that should meet with the approval of the society. However, the operation is not particularly difficult or dangerous, and Mr Bankart has never known of a death directly due to it. He does not put this suggestion forward as an argument against the aims of the society but thinks that it limits considerably the field of its concern. Those who are especially concerned with the treatment of such conditions as inoperable cancer of the pelvic organs might give consideration to the surgical relief of pain. Mr Lambert Rogers, professor of surgery in the University of Wales supports Mr Bankart's suggestion. He states that even before the failure of drugs to relieve pain, surgical relief is frequently advisable in order to prevent the demoralizing effect of large doses of opiates. He has found bilateral division of the pain tracts in the cord valuable in relieving the pain of advanced malignant disease. The outlook for the patient may thus be brightened and entirely changed. In reply to this suggestion, the surgeon H. H. Greenwood, a member of the Consultative Council of the Voluntary Euthanasia Society points out that chordotomy has but limited scope. It is impracticable in cancer of the tongue, pharynx, thyroid, larynx and esophagus. He refers to the widespread belief that lingering cases of fatal disease are ministered to by trained and sympathetic nurses and by every resource of medical science. The hideous truth is that the majority of these patients are discharged from the hospital and terminate their pitiable existence in poor homes. Even in hospitals there is a residuum for whom alone the bill is designed—relief of whose sufferings is beyond medical skill.

The Reform of the Medical Curriculum

As previous letters show, the reform of the medical curriculum has been under discussion for some time. The report of a committee of the General Medical Council (*THE JOURNAL* July 20, 1935, p. 210) was circulated to the licensing bodies

and the deans of the medical schools for their observations. As a result of the replies a revised report has now been submitted to the council, of which the following are the main points.

PREREGISTRATION EXAMINATIONS

Before beginning the medical curriculum proper an examination should be passed in general education, chemistry (theoretical and practical), the elementary principles of the chemical combination of elements, physics (theoretical and practical), the elementary mechanics of solids and fluids, the elements of heat, light, sound, electricity and magnetism, elements of general biology (including practical work), fundamental facts of vegetable and animal structure, life history and function and introductory embryology. The examination in biology may be taken after registration in the period of professional scientific subjects.

THE MEDICAL CURRICULUM

The period of study from registration to diploma should not be less than five years. The first two years should be devoted to professional scientific subjects with an introduction to clinical subjects. Throughout the whole period of study, attention should be directed to the measures by which health may be assessed and maintained and to the prevention of disease. The professional scientific subjects include dissection of the entire cadaver, anatomy of the living body, embryology, histology, the elements of genetics, general physiology, the normal reactions of the body to injury and infection (as an introduction to general pathology and bacteriology), and the elements of normal psychology. In the second year, instruction should be given in the methods of clinical examination, including physical signs, the stethoscope and the ophthalmoscope, the examination of body fluids and introductory pharmacology.

THE PERIOD OF CLINICAL STUDIES

The period of clinical studies occupies the third to the fifth years, during which clinical instruction should be continuous. Students should not pass to this period until they have passed the examinations of the first and second years. A minimum of three years should be given to clinical study in an approved hospital. The medical training includes a clinical clerkship for six months, a continuous period of not less than a month's residence in a hospital or nearby, a clinical clerkship of not less than one month in a children's ward or hospital, regular attendance in an outpatient department for three months, regular instruction and demonstrations in applied anatomy and physiology by the teachers of those subjects as well as those of clinical subjects, instruction in therapeutics (including dietetics, prescribing, physical therapy and nursing), children's diseases and welfare, acute infections, tuberculosis, psychology, mental diseases and deficiency, dermatology, radiology and vaccination. The surgical training includes a surgical internship for six months, during which time the student should spend the greater part of his time at the bedside and in the outpatient department, a continuous period of not less than one month's residence in a hospital, regular attendance in an outpatient department for three months, surgical methods including physical therapy, minor operative surgery on the living, administration of anesthetics (not less than ten times), a course of operative surgery, regular instruction and demonstrations in applied anatomy and physiology by the teachers of these subjects and those of clinical subjects, disease in infancy and childhood, ophthalmology including refraction, otology, rhinology and laryngology, surgical radiology, venereal diseases, orthopedics, and dental diseases. The training in midwifery, gynecology and infant hygiene includes systematic instruction, the applied anatomy and physiology of pregnancy and labor, clinical midwifery, maternity and gynecologic practice for six months not less than two months' residence in a maternity hospital during which the student should attend at least twenty cases under supervision, antepartum and postpartum care, and management of the puerperium.

and new-born infant. Pathologic and bacteriological instruction includes general and special pathology (functional and structural) morbid anatomy, clinical and chemical pathology, general and clinical bacteriology, and immunology. Other subjects of instruction are pharmacology, materia medica (including practical pharmacy), hygiene and public health, forensic medicine, and the legal and ethical obligations of physicians, including national health insurance and other acts of parliament. It will be noticed how exceedingly practical is the curriculum, of which many of the requirements are new.

Reduction of Road Accidents

Official figures just issued show a reduction in the terrible toll of road accidents. During 1935 there were 822 fewer deaths and 12,802 fewer injuries than in 1934. The following table gives the comparative figures:

	1934	1935	Reduction
Killed	7,343	6,521	822
Daily average	20	18	2
Injured	231,603	218,798	12,805
Daily average	634	599	35

The reduction is stated by the minister of transport to be due to the safety measures he has introduced such as pedestrian crossings and the 30 miles an hour speed limit in built-up areas. It is noteworthy that the killed have been reduced in about twice the proportion that the injured have. This is explained by the reduction of speed rendering accidents less fatal. In London, during 1935, 1,116 persons were killed and 55,517 injured. The corresponding figures in 1934 were 1,448 and 59,510. Thus there was a reduction of 332 killed and 3,993 injured. In a broadcast speech the minister of transport said that, although there has been an average addition of 480 automobiles every day throughout the year the number of persons killed or injured on the roads had fallen from 99 for every 1,000 vehicles in 1934 to 87 in 1935. Figures for London showed an alarming increase in the casualties to bicyclists, whereas injuries to pedestrians and other road users had been reduced. He reminded bicyclists of the provisions in the highway code to ride not more than two abreast and, where conditions warranted, in single file also not to cut in or out.

PARIS

(From Our Regular Correspondent)

Jan 3, 1936

Occupational Diseases

The law making obligatory the declaration of occupational diseases dates from 1919. But it applied only to certain of the most important ailments. A decree of Oct. 15, 1935 increased the number of those diseases, and they are numerous. Here is the list: first every disease caused by lead, its alloys and combinations, mercury, arsenic, phosphorus, nickel, fluorine and allied substances, carbon sulfide, chromic acid and chromates, manganese dioxide and pyrolusite, zinc, halogenic derivatives of the carbohydrates of the greasy order (*serie grasse*), benzene and homologous liquids, trinitrophenol, chloroform, and the like, irritant gas and vapors of any kind, cellulose paints and varnishes, alkali and caustic bases, tar, pitch, mineral oils, opium, emetine and quinine alkaloids. To the list are added physical agents such as short wave radiations, radium, and sudden variations of pressure, some irritant foreign timber, and biologic agents, such as bacteria and *Ancylostoma*. The enumeration covers also any product responsible for dermatoses, the powders, either siliceous or ferric, and the dust of wool, every repeated trauma causing inflammation of serous bursae or ligaments or of chronic arthritis, every repeated noise that might cause deafness, and every cause of conjunctivitis or even *in stagmus*.

The difference between the former law for the protection of workers against occupational hazards is that the law formerly

related only to emergencies the cause of which was sudden and unexpected, whereas the worker is now guaranteed against every risk that can be traced to his occupation. He is now entitled to receive half his salary, and a pension if partial or total disability occurs, his family is indemnified in case of death, and he can be treated free by the doctor of his choice, who is paid by the employer. The only great risk of disease not covered by the law is tuberculosis, unless it is the consequence of some traumatism or former contamination. But in this case the worker is protected by the *Assurances sociales* which pay during three years the expenses of sanatorium or special surgery and aid the family. Apropos of tuberculosis another recent decree includes the suppression of the 100 per cent bonus to the pensioned for tuberculosis who would refuse to entrust their children to the care of special organizations. Too often, as a matter of fact, they kept with them their babies, disregarding the risks of contamination. On the other hand, the pensioned for tuberculosis are now bound to give evidence, every three months that they have received regular treatment.

The Vernes Resorcinol Reaction for Tuberculosis

Years ago, Vernes proposed, for the diagnosis of latent tuberculosis, a flocculation test of the blood based on the principle that a suspension of resorcinol causes flocculation of all serums but most of all the serum of the tuberculous. The extent of this flocculation can be read with a photometer and is called the optic index. An optic index greater than 30 shows tuberculosis. Andre Richard Mozer and Mlle Madeleine Poidevin have tried this reaction in osteo-articular tuberculosis in 120 children, in the Maritime Hospital in Berck. The children were from 4 to 15 years old and were selected at random from more than a thousand other tuberculous children. These workers conclude that for diagnosis the Vernes reaction is of little value. When positive, it is an important sign of tuberculosis, but it lacks responsiveness and is negative in 75 per cent of the active cases. In prognosis it seems to have no practical value.

The Hippocratic Oath

France does not like ceremonies, even if they include in the ethics of some profession an element of history, tradition and cooperation. The oath of Hippocrates, for instance, which was in former times a solemn and sacred introduction to medical life, was suppressed after the French Revolution in many of the French faculties although maintained in some others. In the Faculty of Marseilles, which is one of the oldest of the French universities, having succeeded the ancient faculty of Aix, the candidate after the discussion of his thesis, and facing the assembled body of professors, stands up and, with right hand raised, utters the oath of Hippocrates. This custom has just been restored in the University of Paris and this restoration, initiated by Dean Roussy, must be considered one of the many measures demanded by the best part of the profession in order to maintain a high standard of morality among the body of physicians young and old.

Spirochetal Epidemic Meningitis in Children

Drs. Julien Marie and Pierre Gabriel had the opportunity last summer to observe some cases of acute meningitis. Three cases were treated in their hospital. Three children, between 10 and 13 years of age swam in the same river near Paris. Inquiry revealed that other boys who swam in the same river presented the same symptoms called acute meningitis by the local practitioners. In the three former boys evidence of the spirochetal nature of the meningitis was given by a high rate of agglutination and by the inoculation of guinea pigs. The onset was sudden with an unquestionable syndrome of meningitis, the fever reached 40 C (104 F) and lasted six or seven days. The spinal fluid presented a high cytologic reaction, reaching 450 leukocytes, which disappeared slowly about the

twentieth day. It was sometimes a lymphocytosis, sometimes polynucleosis. The termination was regularly in the direction of recovery, without any sequelae. Those cases are probably the first ones of epidemicity of the meningitic form of spirochetosis. The authors think that the epidemic conditions are most probably associated with swimming in a contaminated river, but one must consider also that the houses of the patients were infested with rats. The site of entry was perhaps the conjunctiva. These cases occurred in the summer months. The fact that the exact nature of the disease was ascertained only by biologic research indicates that many similar cases are perhaps undiagnosed and called simply meningitis by poorly equipped country practitioners.

BERLIN

(From Our Regular Correspondent)

Dec 23 1935

The New State Physicians' Law

The German government published the long awaited and much advertised state physicians' ordinance, Dec 13 1935, which will go into effect April 1. It is comprehensive legislation relating to the medical profession and represents years of careful preparation. While retaining what is worth while in previous legislation, it adds much that is new and in keeping with the present day concept of the state. The ordinance originated in the need for a comprehensive regulation of the licensing and practice of the medical profession throughout the reich. Previous legislation governing the profession in the respective states as well as courts of professional honor is abolished and superseded by the new national legislation. In general the new membership of the medical profession will be placed under the supervision of the minister of the interior. The regulatory powers of the minister of labor which apply to medical service in the social insurance societies, sick benefit societies and so on, will remain undisturbed. The *Kassenärztliche Vereinigung Deutschlands* (insurance physicians union of Germany) founded in 1933 also remains although it now becomes an adjunct of the *reichsarztammer* (state physicians' chamber) and legal successor of two hitherto existing organizations the *'Deutsche Aerzterebund'* (German physicians' association) and the *"Verband der Aerzte Deutschlands"* (league of physicians of Germany) or Hartmann league, which according to the new law, will be disbanded.

The *reichsarzteordnung* contains ninety-three paragraphs arranged in five sections. The principal four sections deal with (1) the physician (2) the German medical profession (3) penalties for professional offenses and (4) government supervision. The following quotation from section 1 shows clearly the importance of this comprehensive legislation. 'The physician is called on to administer to the health of the individual human being and to that of the people as a whole. He fulfils the latter function through public duties as regulated by this statute. The medical profession is no trade.'

The first section goes on to outline in eighteen paragraphs the concept of the medical profession and to deal with the appointment of physicians a term which replaces the certification heretofore in use. Accordingly only the person officially authorized or 'appointed' will be allowed to practice medicine and to designate himself "physician." The appointment is valid for the entire reich. Only a physician duly appointed in such a manner may be called on to fill any post involving medical practice or science within the gift of any authoritative or legislative corporate body. This does not apply to persons who are employed under the direction or supervision of a physician. Appointment is made by the minister of the interior on recommendation of the *reichsarztammer* to such persons as fulfill the requirements of the laws governing appointments. Appointment will be denied or revoked (1) when the applicant does not possess civil rights (2) when he is lacking in national and

moral reliability, particularly if he is alleged to possess criminal or vicious traits, (3) when the applicant is declared professionally unqualified, (4) when the applicant is deemed unsuitable or unreliable because of a physical deformity or some mental deficiency or because of a disease, (5) when the applicant is ineligible for government service by reason of his racial extraction or that of his wife and when, at the time of application, the proportion of physicians of other than German extraction to the total number of physicians in the German reich exceeds the proportion of non-German inhabitants to the total population of the reich. The provisions of the existing statutes governing officials heretofore were applied primarily to the *kassenärzte* (sick insurance physicians), besides, following a regulation of the minister of education, physicians' licenses have been refused non-Aryan candidates on general principles. According to the new legislation appointment of non-Aryans shall henceforth be determined by the proportionate number of non-Aryans within the population as a whole, that is to say, about 1 per cent (here as in the laws governing officials, one non-Aryan grandparent or marriage with a non-Aryan constitutes sufficient ground for a refusal). Thus henceforth a numerous *clausus* will apply to non-Aryan physicians not only in the *kassenpraxis* (insurance practice) but in general practice as well. This will scarcely have any important results for the time being as the proportion of non-Aryan physicians still exceeds the legal maximum. By reason of physical defects and so on (item 4) the authorization to engage in the practice of medicine can be revoked as the occasion warrants. Revocation can be made also in case of a duplication of professional income (as for example in the case of a woman physician whose husband follows the medical profession and derives an income from it). Resignation of an appointment is permissible. It is illegal, however, to practice medicine either professionally or factually if the appointment has been revoked or renounced or if application for an appointment has previously been denied. A physician is forbidden also to change his status to that of a *heilkundiger* (lay practitioner), as occasionally has been done in an attempt to make larger profits. It is expressly stated that 'the physician is duty bound to exercise his profession conscientiously and to show by his conduct within and without the sphere of his professional activities that he is worthy of a respect and confidence compatible with the high standards of his calling.'

Regulations concerning professional duties and questions of professional ethics are further provided for in a *Berufsordnung* (professional ordinance). It represents a heretofore unheard of extension of governmental authority into medical activities.

Maximum physicians' fees as fixed by the fee ordinance can be exceeded only with the approval of the *reichsarztammer* in the absence of a written agreement.

Any person who, lacking an official appointment as physician, styles himself by a designation resembling that of a physician and which conveys the impression that such person has been duly authorized to practice medicine under the official designation of 'physician,' shall be subject to imprisonment for a term not to exceed one year or a fine or to both penalties.

Special attention is called to the stipulation that physicians, in the exercise of their profession, are forbidden the use (on announcements, name plates and prescriptions, for example) of any designation that refers to the activities of some predecessor.

The second section, of thirty-two paragraphs, is dedicated to the *reichsarztammer*. It states that 'the vocation of the German medical profession is to effect in the interest of the welfare of people and reich the preservation and improvement of the health of the good heredity and of the racial stock of the German people.'

In future the membership of the German medical profession will present three gradations: first each physician must belong

to a *bezirksvereinigung* (district organization), above these local groups will be a "regionale aerztekammer" (regional chamber of physicians), while supreme medical authority will be vested in the *reichsarztekammer*, whose director (*reichsarztfuhrer*, *reich physician leader*) shall be appointed or removed by the fuhrer and chancellor of the reich on recommendation of the minister of the interior acting in conjunction with the leader of the National Socialist party. The rights of the district organizations over their own membership shall be restricted. For members of the *reichsarztekammer* and the regional chambers as well as for the district leaders the provisions of the "statutes governing officials" apply with special regard to the antecedents of the physician and his wife. In these capacities physicians having one Jewish grandparent or a non-Aryan spouse will not be permitted to serve. Exceptions may be allowed by the director of the *reichsarztekammer*.

The director of the *reichsarztekammer* is assisted by a permanent vice director. The director is empowered also to deputize others for the performance of various duties. An honorary board of which the membership is of his own choosing serves the director in an advisory capacity. This board consists of members of the *reichsarztekammer*, the director of the *kassenarztliche vereinigung* a representative of the regional chambers, and at least one government physician.

Membership in the subordinate organizations is regulated along similar lines. Members of the regional chambers (excepting the adviser who is honorary) are always representatives of the district organizations and the medical faculty of the district as well as being official physicians.

Membership in each *aerztekammer* is for a period of four years. The election of the majority of the members takes place as follows: from five names submitted to it the *reichsarztekammer* selects and appoints two physicians: a regular representative and a substitute.

It is important to note that the directors of the *reichsarztekammer* and the regional chambers as well as the directors of the district groups are not bound to agree with the stands taken on a subject by these respective bodies. They must state the reasons for their opposition, however, for purposes of record.

All physicians in the German reich including research workers and university professors are controlled by the *reichsarztekammer*. The only exceptions are medical officers of the army and navy on active service. Regulations of the *reichsarztekammer* are binding except that they must not interfere with the service activities of medical officials. The *reichsarztekammer* can exact fines up to 1,000 reichsmarks for violation of rules. Every physician residing in a given district belongs to the district organization and a newcomer must announce his presence to the organization. The regional chamber controls all physicians belonging to the district organizations within its sphere. The *reichsarztekammer* shall maintain an official register of all physicians in the reich. All physicians pay compulsory dues to the *reichsarztekammer*.

It shall be the duty of the *reichsarztekammer* to uphold superior scientific and ethical medical standards to see to it that professional honor is maintained and professional duties fulfilled and to foster the education and training of physicians by the creation of facilities necessary thereto. It shall further be the duty of the chamber to promote cordial relations between physicians and to effect an equitable distribution of physicians throughout the reich for the benefit of the profession and of the population as a whole. This means that no establishment of a physician in a certain locality can take place without the consent of the chamber. Moreover, it engages in benevolent activities such as the creation of insurance for the protection of physicians and their dependents in times of emergency.

In addition, the *reichsarztekammer* is empowered to issue special regulations which will assure participation of the physician in the duty of preserving and improving the heredity and the racial stock of the German people, likewise in collaboration with the state bureau of health and the bureau of statistics it may exercise supervision or issue instructions with regard to questions of health, heredity and race. The *reichsarztekammer* has the further authority to assist the public as well as the party in all matters relative to the medical profession especially by furnishing expert opinion and advice.

Medical treatment is considered a part of public welfare service with the exception of such institutional treatment as is reserved for free professional medical activity. Only the *reichsarztekammer* can conclude agreements with the public welfare agents concerning the activities of physicians; it alone determines the conditions under which physicians are permitted to give treatment; it dictates the terms of the agreement and issues regulations for the physician. It makes special binding rules concerning the economic wisdom of therapeutic measures and prescriptions. Medical treatment in the public health service by an individual physician can also be subject to regulation by the *reichsarztekammer*.

Permanent arbitration committees will be established within the district organizations to deal with differences between physicians. In case of a withholding of information or a refusal to appear in person before the committee, a fine not to exceed 1,000 reichsmarks may be imposed as penalty. Should the arbitration committee fail to bring about an agreement, the director of the district organization makes an arbitration if the persons concerned so wish and thus further legal procedure is out of the question.

The third section, of twenty-seven paragraphs stipulates the punishment of professional offenses; it is intended for the physician who is lax in the performance of his professional duties. Violations of the professional ordinances especially are involved. The penalties with which the guilty one is threatened are warning, censure, a fine not to exceed 10,000 reichsmarks, suspension from public welfare activity for a definite or indefinite period of time and finally declaration of the guilty person to be unfit to practice the medical profession. In particular cases the penalty may be made public. Warning, censure, a fine not to exceed 1,000 reichsmarks and suspension from practice can be imposed by the *reichsarztekammer* without further legal proceedings. The more severe penalties however can be inflicted only by the professional medical court. The procedure to be followed in various cases is precisely outlined. Among others, after a criminal procedure has resulted in acquittal a professional procedure can be instituted only if the offenses, while not constituting a breach of the criminal law, violate the professional regulations.

Professional legal procedure may be instituted on the motion of the board of control or of the *reichsarztekammer*; proceedings may also be brought against a physician at his own request if he wishes to clear himself of suspicion. The district professional tribunal consists of a president with judicial powers and two other physicians. The medical law court or professional court of first instance for the entire reich consists of a president with judicial powers and three physicians. The members of these tribunals should not at the same time be executive officers of the *reichsarztekammer* or of the subordinate organizations. The procedure before the professional tribunals is based on existing civil service procedure against accused government officials. A prosecutor is not provided for. The accused may be defended by an attorney, another physician or any authorized official. The president can, without further proceeding, bring the trial to an abrupt close if the penalty of a warning, a censure or a fine not exceeding 500 reichsmarks is deemed sufficient. Against such a closing of the case, how-

ever, all who wish may voice their opposition. From a decision of the medical district court, the board of control or the *reichsarztekammer*, the convicted physician may lodge an appeal with the physicians' supreme court. The decision of this court is final. It is in no way bound by the finding of the district court. It can even change the *res gestae* or remand the case to the lower courts.

When a legal professional action is taken against a physician that is likely to result in his being declared unfit to practice medicine, a preliminary suspension from professional activity can be ordered by the district court. Moreover, such suspension may be imposed, after a hearing before the *reichsarztekammer*, on any physician imminently suspected of serious dereliction in his professional duties. On the other hand, if an action based on gross carelessly reported information is instituted, the costs will be assessed against the person making the allegation.

Among further stipulations worthy of mention is the regulation that authorizes the *reichsarztekammer* to disband any physicians' organizations having as their function the observation of professional economic interests or other affairs. The minister of the interior can likewise in collaboration with the minister of education and after a hearing by the *reichsarztekammer*, disband any organization interested in the advancement of medical science. For the establishment of new organizations of this type, permission of the minister of the interior is required.

Unquestionably, the legislation here broadly summarized, based on long standing knowledge of conditions, and clearing up as it does so many points, is a progressive step in the right direction.

Whether or not these innovations will stand the test of time remains for the future to say. It is a source of gratification that at last, for once, the German physicians are distinctly removed from the status of tradespeople in which a tax-inflicting bureaucracy had placed them—a situation which militated against both their self respect and their professional class consciousness. The reich physicians' ordinance places the professional life of the physician on a new plane. For the first time he is united with his colleagues throughout the reich and the fundamentally independent character of the profession is upheld.

BUDAPEST

(From Our Regular Correspondent)

Dec 5, 1935

The Tercentenary of the University of Budapest

From October 23 to 29, in the presence of distinguished scientists of the world, a celebration was held of the three hundredth anniversary of the university founded by "Cardinal Cicero," Peter Pazmany, the Budapest University of today. At first and during the Middle Ages it had only theological and philosophical faculties, to which the successors of Peter Pazmany in the primate's seat, Losy and Lippay, added in 1667 the legal faculty, filling four chairs with Jesuits. The faculty of medicine was founded through the benevolence of Queen Maria Theresa in 1777, in which year the university moved from Nagyszombat to Buda, the ancient part of Budapest, and in 1784 to Pest. Up to 1848 the university was conducted by the Jesuit order and later by the royal vicegerent council. An act of parliament in 1848 proclaimed the freedom of teaching and learning and placed the university wholly under the control of the Hungarian government.

The jubilee was celebrated with splendor enhanced by the presence of delegates from 130 foreign universities. The celebration was opened by Regent Horthy and Dr. Korniss, rector of the university who in his opening address emphasized that the university was founded in the most tragic epoch of the nation. He pointed out that Hungary stopped the influx of

Tatars and Turks, and that if the Magyars had not fought this battle the Koran would be taught today in Oxford and Cambridge. Former rector Balazs Kenyeres spoke about those modern students who brought fame to Budapest University by their work done abroad. Their thirst for science drove Hungarian students in swarms to Germany, Italy, England, France, Norway, Netherlands and other centers, where many of them gained fame. The Vienna, Cracow, Prague, Konigsberg, Wittenberg and Leipzig universities had Hungarian rectors. A Hungarian, Mihaly Kassa, founded one of the famous libraries of the university of Wittenberg. Another Hungarian, Uri Janos, became the librarian of the university of Oxford. On the recommendation of Boerhaave, the Dutch professor, Paul Gyongyossy became the house physician of the Tsarina Elisabetha. Balsarati was appointed court physician to Pope Paul V, another graduate of Budapest University. Michael Zich, became the court painter of the Russian tsar. Many Hungarians became explorers and discoverers. Count Moritz Benyowszky became king of Madagascar. Korosi Csoma Sandor edited the first dictionary of the Tibetan language. Gheorghe Almassy made explorations in China, Count Eugen Zichy in the Caucasus, and Samuel Fenichel and Louis Biro in New Guinea. Anyos Jedlig constructed in 1827 the first electric motor and in 1859 the first electric dynamo. Farkas Kempelen (1734-1804) constructed a writing and talking machine and also a chess automaton, which may be seen today at King's College, London. Professors Dery and Zipernowsky invented the electrical transformer, Donath Brnky, the carburetor. The first underground electric railway was built by Hungarian engineers in Budapest and was opened in 1895.

Three Nobel prize winners are of Hungarian origin, Philip Lenart, Barany and Zsigmondy. Janos Raymann of Eperjes experimented with cow vaccination in 1717, four years prior to the English Jenner, and Stephan Veszpremy, a practitioner of Debretzin, worked in London on therapeutic inoculations against disease. His priority on this field of medicine has been acknowledged. Hodossy Szolanits Ferencz experimented in 1773 with inoculating insane patients with pus, with the intention of producing a curative fever. The first publication in medical literature of purely laryngologic nature was from the pen of Csermak, professor at Budapest University, in the *Orvosi hetilap*, which is today the leading Hungarian medical journal. Ignatz Semmelweis was a Hungarian physician who constantly accentuated his Magyar origin by wearing the Magyar costume, the braided mantle. His discovery of the cause of puerperal fever was extremely important to mankind.

A special ophthalmologic chair was created in Budapest in 1804, and in 1874 dermatology was accorded a special chair. With slow progress, Budapest University came to be the most frequented university of the world. With its ever increasing popularity and the strong feeling of the Magyars for scientific learning came the endeavor to improve high schools. In 1872 Kolozsvar University was founded in 1912 Pozsony University and in 1914 Debretzin University.

Professor Kenyeres continued his address with a pathetic reference to the cruelty of fate whereby Hungary has been deprived of two thirds of its territory. The misfortune of the war is felt also by our ancient university which lost its mighty estates to Czechoslovakia and which has received them back just now, thanks to the wise decision of the Hague international court. The old link with foreign scientific institutions is limited by the economic position of the state, and the number of university chairs has decreased from 113 to 97 and the number of the auxiliary staff from 367 to 265. Likewise the number of foreign books and periodicals had to be reduced. The position of Magyar youth became serious. The gates of the university had to be closed to many. Among such hardships

with superhuman effort only was it possible to help mothers, infants and children. In this field the National Public Hygiene Institute, founded and maintained by the Rockefeller Foundation, aids immensely.

On the occasion of the three hundredth anniversary of the founding of the university, the state donated a modern astronomical observatory and a seismograph. The faculty of medicine received a new clinic for tuberculous patients, and the state erected a huge home for indigent students.

In connection with the jubilee there was an exhibition of historical relics, including the foundation letter written by the great founder Peter Pazmany, the corroborating document signed by King Ferdinand II in 1635, and a document, called Diploma Inaugurale, written by Queen Maria Theresa enacting the reorganization of the university and the original matriculation books from 1635 on. The history of Budapest University will be shortly published in book form, comprising five volumes written by the present professors and late students of the university.

AUSTRALIA

(From Our Regular Correspondent)

Dec 6, 1935

Medical Problems in India

Speaking to the Medical Missionary Association meeting in Melbourne, Dr H Thomas of Madura, Southern India, described the appalling need for extension of medical service in India. It was difficult to know whether preventive or curative medicine was the more urgent, but curative treatment paved the way toward gaining the confidence of the villagers. In India 8,500,000 persons were born and 6,500,000 died every year. The present rate of increase was therefore 2,000,000 a year and if the fearful infant mortality should be reduced it would be necessary to provide employment and an object in life for a still greater population. That problem would be faced as soon as preventive medicine became more efficient. Despite the country's enormous wealth there was fearful poverty in India, and the per capita wealth was only £19 compared with £450 in England. Only 13.9 per cent of the Indian male and 2 per cent of the female population were literate. The problem of medical work was increased by the fact that 300,000,000 of the 350,000,000 population lived in villages. Centrally placed hospitals were usually established as transport facilities were good and leper and tuberculosis clinics and dispensaries had been established in surrounding villages. More than 50 per cent of the hospitals were self supporting. Dealing with the problem of child marriage, it was necessary to study customs and proceed by gradual evolution rather than by drastic change. The early maturity of Indians was one of the reasons for child marriage. It was hard to make the people understand that their early maturity did not mean marriage. They should be taught a moral sense, and a great service would be done by showing them that there was something beyond satisfaction of passion. Many missionaries felt the strain of the tropics and time and again the medical men had to deal with cases of men and women missionaries with a psychologic imbalance. This caused expense to the mission board and disappointment to the worker and indicated that a psychologic examination was as essential as a medical examination for intending missionaries. There was a tremendous lack of proper equipment and staff in Indian hospitals, and in the 253 mission hospitals and 6,000 government hospitals there were only 73,000 beds or one bed for each 5,000 of the population.

Medicine Through the Ages

The Public Library of Victoria, in conjunction with the British Medical Association, is holding in Melbourne an exhibition of rare medical books extending from 1700 B C to the present day.

Ancient medicine is represented by a facsimile of the Edwin Smith surgical papyrus, a manuscript written in Assyria in cuneiform characters, as well as the Ebers medical papyrus written in Egypt about 1500 B C.

Hebrew medical hygiene of 500 B C from the religious point of view is one of the main themes of the Book of Leviticus. This is represented in the collection by a copy of the extremely rare Coverdale and Tyndale English Bible, printed in Antwerp in 1537.

Greek and Roman medicine from 400 to 10 B C is covered by rare editions of the works of Hippocrates, Aristotle, Lucretius and Celsus. From the second century the works of Galen were for hundreds of years the supreme authority on medical subjects, a well used student's edition of 1548 is shown.

Arabian medicine is represented by a manuscript copy of the Koran and the works of Avicenna. Several of the big encyclopedic works of medieval writers are on view including those of Vincent of Beauvais and of Bartholomew the Englishman both in rare fifteenth century editions. For the qualifications of a "Doctor of Physike" reference may be made to the extraordinarily rare first edition of Chaucer, published in London in 1532.

Two epoch making works of 1543 are on view—both, however, in later editions—the *Astronomia* of Copernicus and the *Fabrica* of Vesalius, the founder of modern scientific anatomy. In 1600 appeared the first great scientific book published in England, the "De magnete" of William Gilbert, physician to Queen Elizabeth.

Rare books of the seventeenth century include Harvey's book on the movement of the heart and blood, Bacon's "Advancement of Learning" and the first edition of Galileo's "Dialogues," published in 1632 and suppressed by the Inquisition. Among other interesting books of the same century is one by John Hall the son-in-law of Shakespeare, describing how he cured his wife's ailments and the "Bills of Mortality," published in London during the great plague of 1665.

Marriages

LOUIS CARROLL SCHUSTER to Miss Verna Mae Dill both of New Orleans, in Baton Rouge, La. Nov. 20 1935

H BROOKS SMITH, Bluffton, Ind. to Miss Claudia Purkhiser of Indianapolis in Fort Wayne, Dec. 31 1935

HENRY BERNARD SHOWALTER, Kenbridge, Va. to Miss Edna Elizabeth Kiely of Marion, Dec. 19 1935

ISRAEL O SILVER, Steelton, Pa., to Miss Miriam Stotsky of Lancaster in Philadelphia, Nov. 24 1935

EDWIN J G VALENTINE JR., Jersey City, N. J. to Miss Virginia Moll of Woodbridge, recently

STANLEY B GORDIN, Alquina, Ind. to Miss Dorothy Estelle Kelsey of Oakland City, Dec. 22 1935

RICHARD D SIMONSON, Boise, Idaho to Miss Marguerite Anne Genten at Winona, Minn. Oct. 11, 1935

JOSEPH W MCHUGH JR. to Miss Catherine Stackhouse both of Johnstown Pa., Nov. 30 1935

WILLIAM H MCCARTY to Miss Sallie Cynthia Holmes both of Marion Va., Nov. 26, 1935

HUBERT GROS to Miss Jean Kramer, both of Delphi, Ind., in Franklin Oct. 17, 1935

ALBAN F TESSIER to Miss Ruth L Kowalke, both of Milwaukee, Nov. 15, 1935

JOHN S WOOLERY, Bedford Ind., to Miss Kay Craig of Detroit, Dec. 28, 1935

GEORGE WILLIAM FOX to Miss Elise Scott, both of Milwaukee, Dec. 21, 1935

LEO F SCANLAN to Miss Louise Crist, both of Philadelphia, Nov. 27, 1935

MORTON VESELI to Miss Dorothy Skolkin, both of New York Oct. 12, 1935

Deaths

Walter Nelson Thayer Jr., Albany, N. Y., New York University Medical College, 1897, past president of the American Prison Association, member of the National Committee for Mental Hygiene and the American Association for the Study of Feeble-minded, assistant physician to the Clinton Prison Dannemora, 1904-1913, physician to the Eastern New York Reformatory, Napauoch 1913-1920, and superintendent 1920-1921, superintendent of the Institution for Defective Delinquents, 1921-1929, superintendent of prisons State of Maryland, 1929-1930, commissioner of correction, State of New York, since 1930, formerly member of cabinets of Governor Roosevelt and Governor Lehman, aged 60, died, January 6 of pneumonia.

Howell Terry Pershing • Denver University of Pennsylvania Department of Medicine Philadelphia, 1883 chairman of the Section on Nervous and Mental Diseases of the American Medical Association, 1912-1913, associate professor of neurology and psychiatry, emeritus, University of Colorado School of Medicine, member of the American Neurological Association consultant neurologist to the Denver General Hospital and the Children's Hospital, author of 'The Diagnosis of Nervous and Mental Diseases' in 1901, aged 77, died Nov 29, 1935.

David Aloysius Prendergast • Cleveland, Western Reserve University Medical Department, Cleveland 1906 member of the American Academy of Ophthalmology and Oto Laryngology, fellow of the American College of Surgeons, visiting otolaryngologist to St John's Hospital consulting otolaryngologist to the Lakewood Hospital and consulting oculist to St Ann's Hospital aged 54, died, Dec 2, 1935, of broncho pneumonia.

Maurice I Rosenthal • Fort Wayne, Ind., Medical College of Ohio, Cincinnati 1890 member of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons and the American Radium Society, fellow of the American College of Surgeons, served during the World War for many years on the staff of St Joseph's Hospital, aged 66, died Dec 24, 1935, of a self inflicted gunshot wound.

Harry Bergman, Livingston, Texas Tulane University of Louisiana Medical Department, New Orleans, 1895, member of the State Medical Association of Texas formerly secretary of the Polk-San Jacinto Counties Medical Society member of the city council, aged 61, medical superintendent and owner of the hospital bearing his name, where he died, Nov 20 1935 of heart disease.

Henry Gray Anderson • Waterbury Conn., College of Physicians and Surgeons Medical Department of Columbia College New York, 1889, past president of the New Haven County Medical Society fellow of the American College of Surgeons served during the World War aged 70 on the staff of the Waterbury Hospital, where he died Dec 18, 1935, of septicemia.

Edward J. Ryan, St John N. B. College of Physicians and Surgeons, Baltimore 1908 formerly assistant in pathology University and Bellevue Hospital Medical College New York at one time on the staffs of the Bellevue and St Vincent's hospitals New York served during the World War commissioner of St John General Hospital aged 52 died Nov 26 1935.

William Lewis Wallace • Syracuse N. Y. Syracuse University School of Medicine, 1897 one of the founders president of the board of trustees on the surgical staff and lecturer of anatomy and physiology Crouse Irving Hospital formerly on the staffs of the University Hospital and the Hospital of the Good Shepherd, aged 73 died, Dec 25 1935 of erysipelas.

John Coleman Everett, Nellysford Va. (licensed in Virginia under the exemption law of 1885) member of the Medical Society of Virginia secretary of the county board of health at one time member of the state board of health aged 73 died Dec 4 1935, in the University of Virginia Hospital Charlottesville, of carcinoma of the colon and bronchopneumonia.

Winfield Scott Devine • Marshalltown Iowa State University of Iowa College of Medicine Iowa City 1887 past president of the Marshall County Medical Society, formerly medical superintendent of the Iowa Soldiers Home Hospital aged 81 died, Dec 11 1935 in the Evangelical Deaconess Home and Hospital of heart disease.

Melville Freeman Johnston • Richmond Ind. Bellevue Hospital Medical College, New York 1886 past president of the Wayne County Medical Society formerly city and county health officer, for many years member of the school board on the staff of the Reid Memorial Hospital aged 77 died Dec 29 1935 of cerebral hemorrhage.

Millard Hunter Fortney, Arcola Ill., Loyola University School of Medicine Chicago, 1919, member of the Illinois State Medical Society, mayor, served during the World War formerly school board trustee aged 47, died, Dec 1 1935 of septicemia, which developed from an injury received in a fall.

William A. Geohagan, Dayton, Ohio Pulte Medical College, Cincinnati, 1882, formerly professor of practice of medicine at his alma mater at one time on the staff of the Bethesda Hospital, Cincinnati, aged 76 died Dec 18, 1935, of cardiovascular renal disease.

Harry Reasoner Geyer • Zanesville, Ohio Medical College of Ohio, Cincinnati 1892 fellow of the American College of Surgeons, on the staffs of the Good Samaritan and Bethesda hospitals aged 68, died, Dec 6, 1935 of hemorrhage due to gastric ulcer.

Philip Gath, Cincinnati, Medical College of Ohio Cincinnati 1893 formerly assistant superintendent and resident physician to the Cincinnati Tuberculosis Hospital aged 67 died, Nov 23, 1935, of coronary occlusion, arteriosclerosis and hypertension.

Arthur Ogburn Spoon, Greensboro N. C., University of Maryland School of Medicine, Baltimore, 1908 member of the Medical Society of the State of North Carolina, aged 54, died Dec 10 1935, in the Wesley Long Hospital, of influenza and pneumonia.

Clarence A. Flowers, Wendell N. C., College of Physicians and Surgeons, Baltimore, 1905 member of the Medical Society of the State of North Carolina aged 54, died, Dec 4, 1935 in the Mary Elizabeth Hospital, Raleigh, of acute dilatation of the heart.

Edward Houghton Green, Legion Texas Jefferson Medical College of Philadelphia 1894, served during the World War connected with the Veterans Administration Facility, aged 68 died suddenly, Dec 19, 1935 in Kerrville, of dilatation of the heart.

Rollin Theodore Adams, Mantorville, Minn., University of Minnesota Medical School Minneapolis 1893, member of the Minnesota State Medical Association past president of the Dodge County Medical Society aged 71 died Dec 6 1935.

Matthew Porter, Dayton, Ohio, Medical College of Ohio Cincinnati 1897, member of the Ohio State Medical Association aged 65, on the staff of the Miami Valley Hospital, where he died Nov 25, 1935 of carcinoma of the pancreas.

Samuel Hoffman Sidlinger, Hutchinson Kan., University of Michigan Department of Medicine and Surgery Ann Arbor 1874, member of the Kansas Medical Society, aged 90 died Dec 28, 1935 of a fracture of the hip and arteriosclerosis.

Olney Windsor Phelps, Warren Mass. Dartmouth Medical School, Hanover, N. H., 1878, an Affiliate Fellow of the American Medical Association formerly member of the board of health and school committee, aged 86, died Dec 2 1935.

Lynn Carl Smith, Adin, Calif. Hahnemann Medical College of the Pacific, San Francisco 1906 aged 63 died Nov 25 1935, in the Veterans Administration Facility West Los Angeles, of carcinoma of the prostate with metastasis to the brain.

Arthur Ernest Smith, Harrison Neb. University of Kansas School of Medicine, Kansas City 1907 member of the county board of health and insanity board, aged 62 died Nov 21 1935 in Lusk Wyo., of cardiovascular renal disease.

Charles Norris Stephenson, Milton, Iowa, Keokuk Medical College College of Physicians and Surgeons 1907 member of the Iowa State Medical Society aged 50 died Dec 19 1935, as the result of a sinus infection and pneumonia.

Bernard Francis Dorgan • New Haven Conn. Yale University School of Medicine New Haven 1926 aged 34 on the staff of St Raphael Hospital, where he died Dec 5, 1935, of peritonitis, appendicitis, nephritis and uremia.

George Hermann Wright • New Milford, Conn., College of Physicians and Surgeons Medical Department of Columbia College New York 1894 aged 67 died, Dec 11, 1935, of chronic myocarditis and acute nephritis.

John Andrew Devine, Bancroft, Iowa State University of Iowa College of Medicine Iowa City 1908, member of the Iowa State Medical Society aged 55, died Dec 10, 1935, of pneumonia following the amputation of a leg.

Ira Edwin Durant, San Antonio, Texas, University Medical College of Kansas City Mo., 1898, member of the State Medical Association of Texas, served during the World War aged 64 died Dec 17 1935 in a local hospital.

Dennis Wilhoit, Bagdad, Ky., Hospital College of Medicine, Louisville, 1900, member of the Kentucky State Medical Association, aged 66, died, Dec. 21, 1935, in the King's Daughters' Hospital, Shelbyville, of heart disease.

P. Norman Sutherland Ⓢ Angola, Ind., Detroit College of Medicine, 1896, past president of the Steuben County Medical Society, secretary of the city board of health, aged 65, died, Dec. 28, 1935, of cerebral hemorrhage.

Ira Everett Dyas Ⓢ Eastport, Maine, University of Cincinnati College of Medicine, 1912, past president of the Washington County Medical Society, formerly member of the school board, aged 67, died in November.

Paul Raymond Siberts, Somerton, Ariz., Northwestern University Medical School, Chicago, 1903, member of the Arizona State Medical Association, aged 59, died, Nov. 22, 1935, at National Military Home, Calif.

William Francis, South Charleston, Ohio, Starling Medical College, Columbus, 1897, formerly mayor of South Charleston, past president of the board of education, aged 67, died, Nov. 29, 1935, of cerebral hemorrhage.

Allen Gray Sampson Ⓢ Philadelphia, Medico-Chirurgical College of Philadelphia, 1901, aged 57, died Nov. 22, 1935, in the Graduate Hospital, of heart disease, cirrhosis of the liver, uremia and diabetes mellitus.

Albert Allen Sanford, Duran, N. M., Vanderbilt University School of Medicine, Nashville, Tenn., 1882, member of the New Mexico Medical Society, aged 78, died, Nov. 12, 1935, at Los Angeles, of myocarditis.

William John Robb, Denver, University of Colorado School of Medicine, Denver, 1913, member of the Colorado State Medical Society, aged 52, died Nov. 22, 1935, in Gallup, N. M., of pulmonary tuberculosis.

Carlton Lee Starkweather, Occoquan, Va., Georgetown University School of Medicine, Washington, D. C., 1898, member of the Medical Society of Virginia, aged 71, died Dec. 11, 1935, of heart disease.

Carlo Pascarelli Ⓢ Brooklyn, Regia Università di Napoli, Facoltà di Medicina e Chirurgia, Italy, 1920, served in the Italian Army during the World War, aged 40, died Nov. 27, 1935, of heart disease.

Edward Chisholm Cobb, Ruther Glen, Va., University College of Medicine, Richmond, 1899, member of the Medical Society of Virginia, aged 59, died suddenly Dec. 14, 1935, of angina pectoris.

Darling L. Peeples, Navasota, Texas, University of Georgia Medical Department, Augusta, 1885, veteran of the Spanish-American War, aged 72, died, Nov. 28, 1935, of coronary occlusion.

John Charles Bennett, Waterloo, Iowa, Rush Medical College, Chicago, 1932, member of the Iowa State Medical Society, aged 32, died, Dec. 10, 1935, in the Presbyterian Hospital, of pneumonia.

Robert Stewart Dowd, Quyon, Que., Canada, Trinity Medical College, Toronto, Ont., 1895, L. R. C. P., Edinburgh, 1895, aged 67, died, Nov. 1, 1935, in the Ottawa (Ont.) Civic Hospital.

Frederick N. Garand, Toledo, Ohio, Kentucky School of Medicine, Louisville, 1891, formerly member of the city council, aged 71, died Dec. 4, 1935, in St. Vincent's Hospital, of diabetes mellitus.

Mark Barton Smith, Los Angeles, Rush Medical College, Chicago, 1883, aged 77, died, Dec. 16, 1935, in the Cedars of Lebanon Hospital, of arteriosclerosis, chronic nephritis and uremia.

Gowan Ferguson, Great Falls, Mont., University of Toronto (Ont.) Faculty of Medicine, 1888, member of the Medical Association of Montana, aged 69, died Dec. 5, 1935, of heart disease.

John William Giles Ⓢ Nyack, N. Y., Hahnemann Medical College and Hospital of Philadelphia, 1885, on the staff of the Nyack Hospital, aged 73, died Dec. 17, 1935, of heart disease.

John Alexander Neff, Victoria, B. C., Canada, Trinity Medical College, Toronto, Ont., Canada, 1888, formerly medical officer of health of Ingersoll, aged 76, died Sept. 10, 1935.

Felix John Scheffer, Onawa, Iowa, John A. Creighton Medical College, Omaha, 1910, formerly county physician, aged 49, died Nov. 27, 1935, of carcinoma of the bladder.

Alexander Hill Neagle, Elmira, N. Y., Columbia University College of Physicians and Surgeons, New York, 1918, aged 44, died, Nov. 26, 1935, of pulmonary tuberculosis.

Charles Warren Dennis, Middletown, N. Y., Rush Medical College, Chicago, 1883, aged 77, died, Dec. 9, 1935, of arteriosclerotic heart disease and bronchopneumonia.

Horace Henry Hosford St. John, Edina, Mo., Barnes Medical College, St. Louis, 1900, aged 84, was found dead in bed, Dec. 17, 1935, of valvular heart disease.

John Edgar Swarts, Canton, N. Y., Queen's University Faculty of Medicine, Kingston, Ont., Canada, 1919, aged 39, died Dec. 13, 1935, of cirrhosis of the liver.

John Keen Young, Hot Springs National Park, Ark., University of Nashville (Tenn.) Medical Department, 1909, aged 55, died, Nov. 7, 1935, of angina pectoris.

Henry Edward Dunham, Minneapolis, Hahnemann Medical College and Hospital, Chicago, 1889, aged 73, died, Dec. 7, 1935, in Rochester, of coronary sclerosis.

Sarah Marie Washburn Alexander, La Valle, Wis., Woman's Medical College, Chicago, 1890, aged 88, died Dec. 5, 1935, of arteriosclerotic heart disease.

Frank Warren Hudson, Troy, Ohio, Eclectic Medical College, Cincinnati, 1929, aged 33, died, Nov. 20, 1935, of pulmonary tuberculosis and brain abscess.

Demas Hartzell Abbott Ⓢ Cincinnati, Medical College of Ohio, Cincinnati, 1896, aged 63, died Dec. 17, 1935, of myocarditis, cholelithiasis and duodenal ulcer.

William Porter McGill, Camden, Tenn., University of Tennessee Medical Department, Nashville, 1877, county health officer, aged 76, died Nov. 30, 1935.

Henry Frank Phillips, San Francisco, St. Louis College of Physicians and Surgeons, 1898, aged 89, died, Nov. 28, 1935, of coronary sclerosis with occlusion.

Fulton Thomas Ross, Kenton, Tenn. (licensed in Tennessee 1914), aged 53, died, Dec. 14, 1935, in the Baird-Brewer Hospital, Dyersburg, of pneumonia.

James P. Dougherty, St. Louis, Barnes Medical College, St. Louis, 1901, aged 75, died Dec. 16, 1935, of cerebral arteriosclerosis and bronchopneumonia.

Henry A. Baker, Oklahoma City, Kentucky School of Medicine, Louisville, 1890, Civil War veteran, aged 93, died Dec. 11, 1935, of senility.

Vincent A. Biggs, Martin, Tenn., Vanderbilt University School of Medicine, Nashville, 1884, aged 76, died, Dec. 10, 1935, of cardiac asthma.

Cyrus Wallace Scott, St. Petersburg, Fla., Long Island College Hospital, Brooklyn, 1882, aged 79, died Dec. 12, 1935, of chronic myocarditis.

Richard Johnson Goodrich, Camsville, Mo., Kentucky School of Medicine, Louisville, 1893, aged 66, died Dec. 11, 1935, of heart disease.

Alfred Minot Wheeler, Lansing, Mich., Chicago College of Medicine and Surgery, 1909, aged 58, died, Dec. 16, 1935, of diabetes mellitus.

Marcus K. McElhannon, Henrievette, Okla. (registered by Oklahoma State Board of Health under the Act of 1908), aged 64, died in November.

Clara Louise Williams, Potter Valley, Calif., Johns Hopkins University School of Medicine, Baltimore, 1902, aged 65, died Nov. 19, 1935.

John W. Field, Atlanta, Ga., Georgia College of Eclectic Medicine and Surgery, Atlanta, 1894, aged 62, died, Dec. 4, 1935, of uremia.

Milton G. McCorkle, Portland, Ore., Tennessee Medical College, Knoxville, 1896, aged 63, died Dec. 6, 1935, of chronic myocarditis.

William Duncan Smith, Edmonton, Alta., Canada, McGill University Faculty of Medicine, Montreal, Que., 1890, died recently.

Mary M. Bennett, Haviland, Kan., Homeopathic Hospital College, Cleveland, 1884, aged 83, died, Dec. 23, 1935, of mitral stenosis.

J. Edouard Besner, Mamiwaki, Que., Canada, School of Medicine and Surgery of Montreal, 1910, aged 50, died Nov. 3, 1935.

Walter Fullarton Maybury, Ottawa, Ont., Canada, University of Toronto Faculty of Medicine, 1897, died, Nov. 19, 1935.

Francis A. Williams, Ritchey, Ill., Columbus Medical College, 1891, aged 80, died Dec. 4, 1935, of arteriosclerosis.

James C. White, Paris, Texas, Missouri Medical College, St. Louis, 1881, aged 80, died Dec. 2, 1935, of senility.

Bureau of Investigation

PLAPAO LABORATORIES, INC

F J Stuart and His Quack Rupture-Cure Device Debarred from the Mails

For more than a quarter of a century one F J Stuart of St Louis has been selling what was essentially a piece of adhesive plaster and a little ointment as a cure for rupture. Purchasers have been obtained through fake analyses and misleading testimonials, and in the past persons who were unwise enough to answer Stuart's advertisements found their letters in the hands of letter brokers, to be rented or bought by any other quacks in the rupture-cure field.

Stuart's device used to be called the "Adhesive Hermal Plaster Pads." The name was changed many years ago to "Adhesif Plas tr-Pads" and still later to "Adhesif Plapao-Pads for Rupture." The original name of Stuart's quackery was the Stuart Plaster Pad Company but many years ago he changed that name to Plapao Laboratories, Inc. The reason for the change in name we do not know but it occurred after some unenviable publicity had been given to the Stuart Plaster Pad Company due to action taken by government officials under the National Food and Drugs Act. Stuart's original claims before the Food and Drug officials hailed him into court were frankly and blatantly fraudulent. The advertising stated definitely "Stuart's Adhesive Plaster-Pads Cure Rupture." After his brush with the Food and Drug officials, this advertising was changed to "Stuart's Plas tr-Pads Give Quick and Permanent Relief," which of course meant the same thing but didn't say it quite so crudely. In fact, the word "cure," which occurred all through the very early Stuart advertising was eliminated and some more euphous but equally misleading phrase used in its stead.

This department of THE JOURNAL carried an extensive article on the Stuart quackery in the issue of Feb 10, 1912. At that time it was brought out that Stuart's device which, according to Stuart would do in a few days what some of the most skilful physicians and surgeons are unable to accomplish in weeks or even months was to all intents and purposes a strip of adhesive plaster with a small pad containing a simple ointment. The padded portion of the plaster was to be placed over the hermal opening and the plaster itself applied to the skin. Then if Stuart was to be believed—which he was not—the plaster would contract strengthen and restore the 'stretched-out and weakened muscles' and the hernia would be cured.

THE JOURNAL article brought out the fact that the Association's chemists after analyzing the ointment which comprised the "patent medicine" accessory to the device reported that it was essentially lanolin to which tannic acid had been added the whole perfumed with oil of pine needles. The same article also disclosed that while Stuart's advertising gave the impression that trusses for rupture are harmful and worthless, yet at the same time he was carrying a line of trusses that he was willing to sell to those who were unwilling to buy his Plapao Pads.

In the article too, some of Stuart's testimonials were discussed. One which Stuart played up at some length purported to be an analysis issued by 'Dr' A B Griffiths of London England. Stuart reproduced the Griffiths 'analysis' in fac simile. It was shown in the first article that Griffiths was himself a faker who made a business of furnishing analyses for various classes of medical humbugs at one guinea (\$5) each. The older article also gave the results of investigations of testimonials published by Stuart showing that individuals who had according to the testimonials been claimed to have been cured of their hernia were, in fact not cured. The article quoted too from Stuart's advertising showing that while he made the claim that the utmost privacy was always maintained in all of his correspondence and business relations nevertheless one of the largest letter-brokers in the country listed for sale or rent over 17,000 original letters that had been sent to the Stuart Plaster Pad Company.

Following the 1912 article there were published references to two cases in which the Stuart device had been alleged to have

produced either death or serious injury. The first concerned the case of a woman who brought suit against the Plapao Laboratories to recover damages for the death of her husband from a strangulated hernia after using Plas-tr-Pads. The man had been suffering from rupture for some years and had worn steel or elastic trusses. Having seen some of the Plapao Laboratories advertisements, he ordered the Plas-tr-Pads applied them on the 15th of the month and on the 19th died from strangulated hernia. The other case was that of a woman who also purchased Plapao Pads and applied them as directed and after using them for some time, was compelled to call a physician because of the pain. The physician testified that he found an inflammatory condition with sloughing and gangrene and peritonitis. While the woman was awarded \$3,000 damages in the trial court, the judgment was reversed on a technicality when it was carried to the Court of Appeals.

In May 1935 the Plapao Laboratories, Inc, and F J Stuart were called on by the Post Office department to show why a fraud order should not be issued against them. A hearing was held in July and occupied four days. The transcript of the record contained nearly 700 pages exclusive of exhibits. In addition, Stuart's attorneys were granted permission to file a brief subsequent to the hearing, and this was done and given

TRUSS USERS

STUART'S ADHESIF PLAPAO-PADS are **patentably different**—being mechanico-chemico applicators—made self-adhesive purposely to keep the muscle tonic called PLAPAO continuously applied to the affected parts and to minimize danger of slipping and painful friction. The fabric is soft as velvet and being adhesive—

—clings closely to the body—



—without straps, buckles or springs

Easy to apply comparatively inexpensive and comfortable

For almost a quarter century stacks of sworn testimonials from many different countries report success without delay from work. Process of recovery natural after which no further use for a mechanical support. Test of the remedial hermal factor PLAPAO sent you. No charge for it now or ever. Write name on coupon NOW, and mail TODAY.

Plapao Co., 2621 Stuart Bldg., St. Louis, Mo

Name _____
Address _____

FREE—Trial Plapao—FREE

due consideration by the Office of the Solicitor of the Post Office Department. After going over all the evidence in the case, the Acting Solicitor Mr W E Kelly, declared that Stuart's scheme was one for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises. Mr Kelly recommended that the Postmaster General issue a fraud order against the Plapao Laboratories, Inc, and F J Stuart debarring them from the mails. This was done on Sep 6, 1935.

The Acting Solicitor's memorandum to the Postmaster General is an extensive record of some forty-eight pages and contains much detail that need not at this time be gone into. It was brought out that F J Stuart started the fraud in 1907 under the name Stuart Plaster Pad Company. In 1910 he incorporated it under the laws of the state of Missouri as Plapao Laboratories, Inc. At the time of the hearing the concern was a family affair, the officers being Frank J Stuart, President, Treasurer and General Manager, Ruth L Stuart (daughter of Frank J) Vice President, and Mrs Stuart (wife of Frank J) Secretary. Stuart himself was said to own all of the \$50,000 capital stock. The gross receipts at the time the Post Office authorities looked into the business were between \$50,000 and \$60,000 a year but in more prosperous years had amounted to as much as \$250,000 a year. Mr Kelly's memorandum also states that the concern has been advertising in about twenty-five newspapers, placing the advertisements through an agency the Commercial Advertising and Exploitation Company,

which also was owned by Stuart. In addition to the quackery involved in this case, the Plapao Laboratories, Inc., also sold artificial limbs, braces, abdominal supporters, suspensories and similar articles.

The memorandum then goes on to detail the means by which Stuart was able to catch his victims belittling ordinary trusses, warning the public against them, elaborating on the proposition that the principle on which the truss works is wrong, while the Plapao Pads were right, etc. Stuart still had his 'patent medicine' adjunct, the ointment that was supposed to heal the rupture and which, of late years, he has called "Factor Plapao." This was supposed to be rubbed into the skin over the rupture before applying the Plapao Pads. The Pads themselves are described in the Solicitor's memorandum as follows:

"Stuart's Adhesif Plapao-Pads consist of a strip of adhesive tape about sixteen inches long and two and one-half inches wide which broadens out to an irregularly circular section about four and one-half inches in diameter and about one and three-fourths inches from one end of the strip. To this roughly circular part is attached half of an ovoid shell made of some hard substance approximately two and three-fourths inches long by two inches wide, which is the equivalent of the pad on an ordinary truss. This ovoid shell is pierced upon the surface which is applied to the body by a five-sixteenths of an inch opening through which its contents, consisting of the Factor Plapao is supposed to flow onto the skin of the wearer, this 'Factor Plapao' being the salve contained in the shell.

The memorandum brought out, further, that the ointment that was supposed to heal the rupture was still essentially lanolin with astringents (tannic and gallic acids) making up the bulk of the medicament. It appeared however, that occasionally the so called Factor Plapao contained red pepper and even oil of mustard. The memorandum also made clear that Stuart attempted to evade responsibility by stating in a circular that was sent with the device after he had the victim's money that the company would "assume no responsibility for the improper application or use of Plapao Pad." It also showed that while the advertising literature led the ruptured to believe that trusses were dangerous or worthless and that the Plapao Pad was the only real cure, the purchaser found after paying for the device and getting the instructions for its use that it was practically essential in every case also to order a belt or a truss.

The government put on the stand as experts two reputable physicians, one the Acting Surgeon-General of the United States Army and the other a prominent surgeon from the District of Columbia. Both of the men had had long experience in dealing with various kinds of ruptures and were thoroughly familiar with the proper methods of treatment. They testified, after thoroughly familiarizing themselves with the Plapao device and the constituents of the salve, etc., that the thing was worthless as a cure for rupture. These physicians showed that it was quite impossible to cure a hernia by rubbing a counter-irritant on the skin over the hernia.

Stuart put on two alleged experts, both of them, it appears from the memorandum, homeopaths. One of these men claimed that he had treated an Iowa senator for ventral hernia with the Plapao Pads. He would not, however, declare under oath that the senator was cured, but did express the opinion that his condition was improved. The Solicitor's memorandum states that the cross-examination of this witness showed that he had a very inaccurate and uncertain recollection of the case and that his statement could not be taken as correctly reporting either the nature or the cause of the hernia suffered by the senator or the character and results of the treatment. The same physician also admitted that he had never since used the Plapao Pads on any of his own patients, and he refused to express any opinion as to the efficacy of the Plapao Pads when used for femoral or inguinal hernias. In fact, the Solicitor pointed out that the testimony of this physician who appeared as an expert for Stuart flatly contradicted the representations contained in Stuart's literature.

The other expert produced by Stuart testified on direct examination that he had observed good effects where he had applied Plapao Pads to persons who had purchased them through one of Stuart's demonstrators at a local hotel. The doctor stated that hotel employees had an arrangement whereby purchasers of the Plapao Pads were sent to him (the physician) to have

the Pads applied. The memorandum brings out that on cross examination this physician displayed and confessed ignorance of the anatomical structures involved in hernia, both as to their location and function. When questioned concerning Poupart's ligament, he is said to have stated that he had heard of it! He was unable to answer a question as to where Poupart's ligament is located.

Stuart also brought to the hearing as witnesses laymen who were to testify as to the efficacy of the Plapao Pads. They came from Alton, Ill., and Bloomington, Ind. All of the witnesses, however, wore belts or some other retaining device in addition to Plapao Pads! The government put on the stand some lay witnesses who had used Plapao Pads without any beneficial results, and one of the witnesses had been taken ill while wearing a Plapao Pad and had to be hastily removed to a hospital and immediately operated on.

The memorandum refers, also, to the fact that Stuart also advertised that he had a cure for irreducible rupture that was 'successful when everything else failed.' This also consisted of a device with a 'patent medicine' adjunct. The latter, instead of being called 'Factor Plapao,' was called 'Abaco,' but it had practically the same composition as Factor Plapao. The only difference was that while the Factor Plapao was supposed, when rubbed on the skin, to cause the muscles to come together and close the opening, the Abaco, when rubbed on the skin was said to break up the adherent, incarcerated, irreducible bunch! There is much more in the Solicitor's memorandum regarding this fraud, but sufficient has been said to indicate the character of the swindle that Stuart has carried out for so many years. On Sept 6 1935, the mails were closed to the Plapao Laboratories, Inc. and F J Stuart and their officers and agents as such.

After the fraud order had been issued against the Plapao Laboratories Inc., and F J Stuart, Stuart attempted to evade it by sending out equally fraudulent material under the old name of his quackery the Stuart Plaster Pad Company. As a result, the Solicitor for the Post Office Department on November 13, 1935, recommended that a supplemental fraud order be issued against the Stuart Plaster Pad Company. The Postmaster General issued such an order on November 15. A further supplemental order was issued on December 21 to cover the name Plapao Company.

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer shipper or consigner, (3) the composition, (4) the type of nostrum, (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Alberty's Organic Phosphate Pellets—Alberty Food Laboratories, Hollywood, Calif. Composition: Calcium iron sodium potassium and phosphorus compounds, in milk sugar. For building nerve tissue. Fraudulent therapeutic claims.—[N J 23017 April 1935]

Dakota Jack's Cowboy Liniment—Dakota Jack White Moon Remedy Co., Louisville, Ky. Composition: Essentially a volatile oil such as turpentine oil ammonia (1 per cent) chloroform linseed oil and water. Fraudulent therapeutic claims.—[N J 23010 April 1935]

Instant Alberty's Food—Alberty Food Laboratories, Hollywood, Calif. Composition: Essentially dried milk and plant material including starch. Body builder, etc. Fraudulent therapeutic claims.—[N J 23020 April 1935]

Red Monk Tonic—Red Monk Medicinal Wine Co., Los Angeles. Composition: Essentially caffeine, a small amount of quinine compound with alcohol, glycerin and water. For blood and nerve disorders. Fraudulent therapeutic claims.—[N J 23024 April 1935]

Almo Tonic—Hallstead Mfg. Co., Hallstead, Pa. Composition: Essentially laxative plant extract, alcohol (28.6 per cent by volume) and water. For nerve, kidney and liver disorders. Fraudulent therapeutic claims.—[N J 23024 April 1935]

Correspondence

TESTS OF RENAL EFFICIENCY

To the Editor—I am greatly interested in what Dr R H Freyberg had to say about the choice of tests of renal efficiency in *THE JOURNAL*, Nov 16, 1935. Undoubtedly the Newburgh-Lashmet concentration test and the urea clearance test accurately measure kidney function, but for the practitioner they are unwieldy. The first test requires thirty-eight hours under a carefully selected diet with 1 Gm of salt added and the severe restriction of fluids to 780 cc in twenty-four hours. The collections of urine are taken over this period of thirty-eight hours. The urea clearance test requires three hours of the patients' and attendants' time and the added expense of chemical analyses. Obviously such involved procedures are not adaptable to ordinary medical practice.

A hazard of the Newburgh test is that with such severe fluid restriction, patients with moderately advanced Bright's disease may be precipitated into uremia. Dr Harry H Derow at the Beth Israel Hospital has abandoned the test for this reason.

I still believe that the fifteen and thirty minute phenolsulphonphthalein excretion test, which requires one hour of the patient's and doctor's time and no laboratory expense, is the test of choice for the practitioner.

EARLE M CHAPMAN, M D, Boston

BLOOD TESTS FOR PATERNITY

To the Editor—In *THE JOURNAL*, Dec 21, 1935, page 2096, a correspondent requested information concerning the age of an infant when agglutination tests for paternity should be undertaken. The answer stated that, "in cases of disputed paternity, reliable results can be obtained even when the blood of newborn infants is tested" and that the incomplete development of the blood group at birth did not interfere with its determination. I should like to qualify these statements by pointing out that certain phases of the development of the blood group in the young infant often necessitate postponement of the tests before they can be accepted with the finality required for forensic purposes.

In a study entitled "Iso Agglutinins of the New-Born" (*Am J Dis Child* 36:54 [July] 1928) I presented the results of an investigation which strongly suggested that iso-agglutinins detected in the cord blood and in the peripheral blood of the infant for a variable period after birth were in large part derived from the mother through the medium of placental transfer. In twenty-seven of forty-one cases in which iso-agglutinins were noted in the blood of the umbilical cord reexamination within ten days revealed either a diminution in their titer or their complete disappearance. The blood group was later definitely established with the elaboration by the infant of iso agglutinins and receptors of its own manufacture. The significance of this sequence of events was illustrated in two cases encountered in this study. In these infants the cord blood revealed the presence of a and b iso-agglutinins and the complete absence of agglutinogens, so that the blood, like that of the mother, could be classified as group O. Reexamination of the blood of these infants within ten days failed to reveal any trace of either iso agglutinin. A and B agglutinogens on the other hand made their respective appearance at this time. With later retesting, the acquisition of the corresponding b and a iso agglutinins was in evidence and the blood groups could be completely classified as A and B. In other words the blood of the two infants at birth fulfilled the requirements of group O by tests for receptors and iso-agglutinins, to be replaced subsequently by their own blood groups A and B. These are instances in which the iso-agglutinins that disappeared did not

properly belong to the infant but had presumably originated by placental transmission from the mother. Changes of this character are probably not uncommon and must be borne in mind when blood group determinations are utilized for medicolegal purposes. If blood tests to exclude paternity had been carried out on these two infants at birth they would have satisfied the requirements of group O. With the subsequent dropping out of one or both iso-agglutinins and the development by the infant of its own specific agglutinogens and their associated iso-agglutinins, the problem of paternity is reopened for discussion. Such a train of events is of special significance when the permanent blood group contains at least one of the receptors, in which case more precise linkage to a parent may be established.

When an important decision, such as the exclusion of paternity, is to be rendered on the basis of blood group determination, it is urgent that the results in the instance of the infant be evaluated in the light of these observations. The conclusion which this study justifies is the expediency, from the medicolegal standpoint, of deferring these tests for a minimum period of at least two weeks, so that the development of the blood group by the young infant may be assured. Particularly is caution to be exercised when the blood at birth conforms to that of group O. When it is anticipated that paternity will be disputed, frequent retesting from birth is desirable in order to record the development of the blood group factors. It is possible, perhaps, that these restrictions apply as well to the M and N agglutinogens of Landsteiner and Levine, which have recently been subjected to genetic analysis.

CARL H SMITH, M D, New York

New York Hospital Children's Clinic,
525 East Sixty-Eighth Street

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but the name will be omitted on request.

COLD ALLERGY OR PRURITUS HIEMALIS

To the Editor—I am treating a man who is 60 years old. His past history is in every respect negative. For the last twenty years he has had an intense pruritus. The itch sets in with the cold season and disappears year after year with the onset of warm weather. Examination of the patient by numerous physicians was always negative. No skin treatment or internal medication brought any relief. Would you consider this a case of cold allergy? What would be the treatment? Please omit name.

M D New York

ANSWER—The description given does not state whether the itching is periodic or constant, whether it occurs only after chilling, or what parts of the body are affected. It seems sufficient, however, to exclude pruritus due to toxic conditions, icterus, some form of lymphoblastoma, internal carcinoma, malaria, diabetes, tuberculosis, skin parasites and nephritis. These can hardly be imagined operating each winter for twenty years and ceasing to cause itching in the spring time. Four possibilities present themselves: (1) pruritus hiemalis (2) bath pruritus, (3) chilblains, (4) cold allergy.

Pruritus hiemalis comes on with the first cool weather and persists until the advent of warmer weather in spring, growing worse as the temperature falls and better as it rises. It is more pronounced on undressing morning and evening and for an hour or two after retiring. During the day there may be little irritation. It is quite general but often is more intense on the anterior inner sides of the thighs on the calves about the joints and on the forearms. The only skin lesions are the secondary changes due to scratching. It is ascribed to a naturally sensitive skin deficient in fat and perspiration and therefore too dry in the dry air of winter. Coarse woolen underwear encourages it. The remedy is avoidance of soap and hot water in bathing and frequent applications of oil or ointment, particularly right after bathing before the skin is wholly dry. Measures should be taken to keep the air moist in the patient's rooms.

Bath pruritus is the result of drying of the skin by too generous use of soap and hot water in the dry air of winter and

steam heated apartments. It is most apt to occur on the legs, where the skin is often seen to be dry and scaly. Another favorite site is the upper part of the back, which is subject to a peculiarly stinging itch on retiring after a hot bath. It is better to bathe in the day time, for the itching seems to be less when the patient dresses after the bath and keeps his mind occupied. Soap should be used only on the hairy parts, feet and hands. Luke warm water followed by cold water is best.

Chilblains would affect only certain of the extremities in which the cutaneous circulation has been injured by freezing or severe chilling. The part is bluish red, moist and cold. The itching can be alleviated by compression for a short time with a wide elastic band, by exercise of the blood vessels by means of warm baths followed by a short cold douche and vigorous massage toward the center of the body with some oil or fat, by the faradic current, or by coating the part with successive layers of paraffin and then stripping them off. If the feet are affected, as is usual, loose warm footwear is imperative. No garters should be worn.

Cold allergy is manifested by attacks of swelling and congestion of the part, usually an extremity, after exposure to cold, accompanied by a tingling sensation. Soon after this, throbbing and burning sensations occur in the part affected and a general reaction comes on, with flushing of the face, rapid pulse, low blood pressure and sometimes fainting. If return circulation from the exposed part is prevented by a tourniquet, no general reaction occurs until the tourniquet is released, showing that the reaction is due to some substance, resembling histamine, that is separated or produced in the tissues by the chilling. The general reaction passes off in about a half hour, but the local reaction may continue for twenty-four hours. This hypersensitive condition can often be cured by daily graduated cool baths, just enough to cause a slight reaction.

DERMATOPHYTOSIS

To the Editor—I am suffering from a severe attack of epidermomycosis on my fingers and hands. I have used to date iodine solution as suggested by the Philadelphia Skin and Cancer Clinic sulfur ointment modified Whitfield's ointment balsam ointment taralba (Stearns's distillate of coal tar) Upjohn and crude coal tar and zinc oxide. I cleared up the first attack (July 15, 1922) but the last remission (August 13 to the present) seems too stubborn. Kindly suggest further treatment. The skin becomes dark red blisters form and break, leaving raw pits the skin peels under the new skin are more blisters. There is considerable itching which is controlled by tar ointment. M D Wisconsin

ANSWER—The treatment of dermatophytosis calls for resourcefulness on the part of the physician. The fungi seem to be as versatile in their cultivation of resistance to medication as they are in causation of sensitivity of the patient.

An examination should be made for fungi in the tops of the vesicles. The tops should be removed, placed bottom up on the slide, covered with 10 per cent potassium hydroxide, a cover glass put over the preparation, and the slide placed in a humidior, a petri dish in which there is a small piece of moist blotting paper. At intervals search for fungi should be made by means of the high dry lens. If fungi are not found within seventy-two hours, the case may be a local sensitization caused by the previous ringworm infection. In that event a trial of soothing treatment is indicated, cool wet dressings of solution of aluminum acetate 1:16 in water followed by calamine lotion. After the blisters cease to form a zinc oxide paste, zinc oxide and starch, 25 per cent of each in rose water ointment, may be applied once a day.

If fungi are found, the cool wet dressings of solution of aluminum acetate should be followed by a Whitfield ointment, 3 per cent salicylic acid and 6 per cent benzoic acid in rose water ointment applied twice a day after the cool wet dressings. Bathing is allowed, soap suds being used copiously on the feet but not allowing them to soak. The feet are dried and the ointment is applied. If preferred, the parts may be painted once daily with 1 per cent solution of potassium permanganate, allowed to dry, and a generous application of talcum powder applied with a cotton pad between the toes to prevent rubbing and perspiration. When the skin becomes too dry the painting is stopped and the Whitfield ointment applied. This may be made stronger, of course, if thought necessary.

Roentgen treatments, one-fourth erythema dose (75 roentgens) once a week, will often clear up such an eruption whether it be due to sensitization or to ringworm infection. After the eruption has subsided, soothing applications should follow, calamine lotion or zinc paste, for about three weeks. After this, if the case is one of ringworm infection, Whitfield ointment, a salicylic sulphur ointment or some active fungistatic should be used to prevent recurrence. If this effort is successful, the medication may be gradually lessened. It should be kept up to some degree for at least one month after apparent

cure. It is understood, of course, that roentgen treatments should cease after two full erythema doses (600 roentgens) have been given and that all irritating applications must be avoided during and for three weeks after the use of the rays.

HARDNESS OF HEARING

To the Editor—I am 38 years of age, graduated from medical school in 1920 eighth in my class of 186 have worn glasses since 1917 for a myopia and astigmatism and had apparently good hearing during my college days. In November 1925 I contracted a good dose of bilateral mumps and was tied up for about two weeks and had a slight case of diphtheria in April 1922. In June 1920 just after graduating I had the tonsils and adenoids removed. In my early life and up to about 1912 I had many attacks of tonsillitis and quinsy. I believe that I first noticed deafness about eight years ago but of course it was slight and I did not think anything about it until the past two years when it has become quite noticeable to myself and my wife and it naturally is a handicap in practice unless the patient speaks a little louder than usual. In medical meetings at present I am lost and really do not gain anything by attendance. A year ago I went to Philadelphia and consulted a prominent otologist who is a professor in my medical school. He gave me a rigorous examination. The hearing tests with tuning forks were confirmed by the audiometer. The hearing on the right side was seriously impaired and the hearing loss in sensation units was 48 per cent on the left side a loss of 24 per cent. Neurologic (Barany) examinations suggested impaired hearing due to causes beyond the middle and internal ear. The rotary and caloric stimulations of both horizontal semicircular canals were greatly impaired. The vertical canals of both sides were blocked in the vestibulo-ocular tracts also of the vestibulo-cerebellar tract of the right side. This reaction to the test indicated some pathologic change where the stimuli enter the brain stem to the ocular nuclei in the posterior longitudinal bundle on a level with the middle cerebellar peduncles. Perhaps there was an unrecognized middle ear and mastoid infection or the toxins resulting from the mumps produced this pathologic change along the floor of the meninges such as a serious meningitis might cause. He suggested neurologic, roentgen and ophthalmologic examinations. All these tests were done. Roentgen examination proved negative for both mastoids except that there was a slight darkening of the periphery of the right mastoid. Otherwise both were clear. The neurologist gave a negative report. The eye report was O D —1.00 —0.75 cy ax 90 O S —2.25 —0.75 cy ax 97½. I had my glasses made according to that prescription which was practically identical with my former one. To my personal history I can add that I never had a discharging ear nor do my parents remember such. Both my parents are deaf my mother becoming so at about 20 years following a cold from a rain storm while my father has been that way for the past ten years he is now 62. There is no history on my father's side of deafness but my mother's father was deaf (He stated that he contracted it working in a locomotive boiler works?) but there is also another son who is very deaf. My father now wears an electrical device over his ear as he states that bone conduction does not seem to help him my mother is too self conscious to wear one but hears only if one speaks very loudly. She watches the lips too. Urinalysis is negative the Kahn reaction is negative and a blood count is as close to normal as possible. Is there any treatment you can suggest that might be helpful or in your opinion is treatment hopeless? In such case would you advise a hearing device as bone conduction? I recall hearing of a woman who is more deaf than I yet when she suggested a hearing device to her otologist he emphatically told her that one would only make matters worse. I cannot understand that attitude. Recently I was told of a physician using indirect diathermy in treating deafness. Is there any value or harm in this method? I have been a great follower of your department in THE JOURNAL and have saved many an article which has been helpful. Kindly omit name if printed. M D Pennsylvania

ANSWER—It is quite unlikely that any form of treatment will have much effect in this case. On the other hand, it is possible that the hearing may remain in its present status indefinitely. With reference to electrical hearing aids, one may say that, if the bone conduction is good, electrical hearing devices, especially those with a bone conduction attachment, in many instances aid the patient greatly. There is no statement here with reference to the bone conduction, so it is impossible to say whether in this instance the hearing device will afford benefit. It will be necessary to have the bone conduction tested and then if it is fairly normal, or perhaps even lengthened, to try out one or several of the aids now on the market. It is advisable to buy one only if the patient finds that there is a material improvement when the apparatus is being used, but he must be careful to keep the eyes closed at first in testing the instrument in order to be sure that he is not doing some lip reading at the time and that the improvement if any, is actually due to the appliance then being tried. If the bone conduction is very materially shortened, it is doubtful whether any appliance will be of assistance, but the ordinary 1 meter hearing tube used with one end in the patient's ear and the larger funnel shaped end used by the speaker, is often of material assistance. Many persons abstain from using the tube because of inconvenience in carrying it about and the embarrassment it causes many persons when using it. So far as diathermy is concerned, we have never seen any data to make one believe that this method of treatment is of any avail.

HIRSCHSPRUNG'S DISEASE

To the Editor—A girl baby aged 16 months presents the signs and symptoms of early Hirschsprung's disease. The baby has one brother who is suffering from the same condition. What is the present status of medical and dietary treatment? What is the status of surgical treatment as reported by Dr Rankin, viz., resection of sympathetic nerves? When is this surgical treatment indicated? Can anything be done to arrest the further progress of an early condition?

SAMUEL C YACHIN M.D. Lyndhurst N.J.

ANSWER—Remedies of various kinds have been used in the treatment of Hirschsprung's disease without material benefit. Drugs intended to relieve the spasticity of the bowel, such as belladonna or atropine, have not yielded results. Cathartic drugs are usually without much effect, produce colic and tend to make the condition worse. Liquid petrolatum given by mouth acts as an intestinal lubricant and sometimes assists in the evacuation of hard feces. Enemas of olive oil, plain water or physiologic solution of sodium chloride tend to prevent stasis and are used to give the patient relief.

So far as the dietary treatment is concerned the patient should be given water in abundance and a nutritious diet that contains a minimum amount of residue and cellulose material. In an infant of 16 months, milk with addition of a malt preparation or Keller's malt soup, and fruit, preferably stewed, vegetable soup carefully pureed, and sweets, as honey, jelly or jam, maple syrup or corn syrup with white bread, are indicated.

Hirschsprung's disease is due to an achalasia, a failure of the colonic musculature and of the rectosigmoidal sphincter to relax. A Berg (Libman's Anniversary Volumes, volume 1), in reviewing five cases of Hirschsprung's disease in which ganglionectomy and ramisection was performed, found that the constipation was relieved, though the caliber and size of the bowel were not influenced by the operation. Consequently the patients are still liable to suffer from a complicating volvulus. Berg concludes that, if the occurrence of volvulus is to be averted, the dilated, elongated loop of the intestine must be resected. Fred W. Rankin and James R. Learmonth (*Ann Surg* 92:710 [Oct] 1930) advise that ramisection be performed before profound atony or extensive atrophy has occurred. Alfred W. Adson (*Ann Int Med* 6:1044 [Feb] 1933) reports that sympathectomy has been performed without a fatality in eight cases of Hirschsprung's disease occurring in children and in two cases of acquired megacolon in young women. Adson says that his patients had symptomatic relief and that although the colon was reduced in size it did not become of normal dimensions after the operation.

Most clinicians, particularly surgeons, advise that operation be performed relatively early before extreme dilatation of the colon and loss of weight and strength have occurred. Early operation, if successful, would diminish the occurrence of volvulus and intestinal obstruction.

In a case of genuine Hirschsprung's disease, no procedure short of surgical intervention along the lines already indicated will arrest the progress of the disorder.

TREATMENT OF ANGIOMA

To the Editor—Please let me know the best method for treating a case of capillary angioma in a 3 months old baby boy. The angioma is about 2.5 cm in diameter and is located over the parietal region of the scalp. There is some hair growing on the area of angioma. It is more pronounced now than before. What would be the best age for treatment now or later? Will carbon dioxide snow remove the tumor satisfactorily without destruction of the hair follicles? Will electrical coagulation or quartz light be less apt to injure the hair growth in the region of the tumor?

M.D. Washington

To the Editor—I have a hemangioma case in a baby 13 months old. The hemangioma is 2½ inches in diameter is about one fourth inch thick (elevated above the skin) and is growing rapidly. There are of course several ways to treat this type of a condition but what I am interested in is to know whether or not it might be treated by the dry ice method. Are there any dangers in this method or any contraindications? What are the advantages of this method over others if any?

M.D. Washington

ANSWER—In view of the fact that the angioma mentioned in the first query shows signs of increase in size it would be well to treat it immediately. Carbon dioxide snow cautiously used will remove the tumor satisfactorily. Electrocoagulation would be more painful and unless very cautiously used might injure the hair growth. Quartz light (water cooled) is of questionable value in these cases. In the use of carbon dioxide snow the degree of reaction varies with the pressure and the duration of the application. The duration of the freezing is the most important factor. At the first application the freezing is usually from a period of five to ten seconds. Subsequent applications with increased pressure or greater duration depend on the amount of destruction desired and the degree of involution resulting from

the previous application. If the lesion is a simple capillary hemangioma (nevus araneus), application of the snow or the electric cautery to the central body, from which the capillaries radiate, often suffices. More than one application may be needed.

The hemangioma described in the second query can be treated by the dry ice method. Carbon dioxide snow is prepared from the liquid carbonic acid gas as it exists in high pressure tanks (Pusey, W.A. Principles and Practice of Dermatology, New York, D. Appleton & Co.) or from "dry ice" (Bloom, David A. Simplified Method of Preparing Pencils of Carbon Dioxide Snow, *Arch Dermat & Syph* 32:105 [July] 1935). The freezing is usually carried out for a period of five to ten seconds at the first application. Subsequent applications with increased pressure or greater duration depend on the amount of destruction desired and the degree of involution resulting from the previous application. The only danger in this method is over-treatment, but if the first application is cautiously given this will not take place. This method must be used with care in areas where the surfaces of the skin come in contact or where contamination may take place, as about the anogenital area. The advantage of this method over radium is the fact that less experience is required for carbon dioxide snow than for radium. Then, too, the snow is less expensive than radium. With good technique a desirable cosmetic result may be obtained. A greater degree of scarring usually results from the electro-surgical methods.

GALACTORRHEA

To the Editor—An obese woman aged 54 except for moderate dyspnea and palpitation associated with a chronic myocarditis has enjoyed good health in recent years. Her complaint now is an amenorrhea of five and one-half months duration morning nausea and a profuse milky secretion from both breasts. She supposes that she is pregnant. Pertinent facts in the past history are as follows. Her menstrual periods have always been normal from the menarche at the age of 14 until five years ago when she had an asymptomatic menopause the menses gradually becoming scanty and finally ceasing altogether. About eighteen months ago menstruation was resumed and was regular of the twenty-eight day type with no skipped periods or bleeding between periods. Each period was of four to five days duration. There was a scanty leukorrhea in the intermenstruum. She has had ten pregnancies only two of which reached term and both of these babies were small and died in the first few weeks of life. The patient is 5 feet 6 inches (168 cm) in height she weighs 220 pounds (100 kg). She is edentulous. The throat is normal. The thyroid is not palpable. There are no tremors. The skin is dry. The finger nails are brittle. There is eczema of the external auditory canals. The chest is clear. The heart shows moderate hypertrophy. The arteries are just palpable at the wrist. The blood pressure is 122 systolic 76 diastolic. Both breasts are large firm and present no nodules. The nipples are reddened and not retracted and an abundant milky fluid is easily expressed from each. The abdomen is very obese and pendulous. (The patient thinks this has enlarged recently as a result of the supposed pregnancy.) Pelvic examination is difficult because of the patient's size. The cervix is firm and lacerated and presents a small amount of mucoid discharge. The fundus is retroverted slightly enlarged to about the size of a lemon. No masses were palpated in the adnexa but this part of the examination was very difficult. The extremities are obese but slender at the ankles and wrists. Varicose veins are present. Blood examination revealed hemoglobin 90 per cent red blood cells 4,950,000 white blood cells 7,000. The Wassermann reaction is negative. The urine is entirely normal. I am unable to make a diagnosis in this case and should like any suggestions for further studies that might be made. I am particularly interested in the cause of the lactation. My opinion is that the cause is in the field of endocrinology but I am unable to locate the cause.

M.D. Michigan

ANSWER—The correspondent is probably correct in the opinion that the condition belongs in the class of endocrinopathy. It is an old observation that milk may appear in the breasts during puberty during menstruation, at the menopause and also if there are fibroids. This renders the sign unreliable in the diagnosis of pregnancy. Galactorrhea however is rare in the menopause and so also is a return of the regular periods such as occurred in this case. Naturally, one thinks at such times of some disturbance of the glandular apparatus, and as the two organs mostly involved in the milk secretion are the ovaries and the hypophysis (galactin), suspicion rests on them. A granulosa cell tumor of the ovary or a tumor of the hypophysis might produce the symptoms. The shape of the woman and her history indicate pituitary dysfunction and some dys-thyroidism. Investigation is recommended along these lines and it might also be interesting to make an Aschheim-Zondek test. The return and regularity of the periods point rather strongly to the ovary, their cessation leaves the hypophysis as the probable cause. Abdominoscopy might visualize the two ovaries, roentgen examination the pituitary.

Recently McNeile has recommended camphor in oil, 0.1 Gm daily intramuscularly, for three or four days to restrain the milk secretion after delivery. It might be tried in this case. If the patient is not pregnant, administration of estrogenic substance may have some effect on the galactorrhea.

PAIN AND TENDERNESS OF BREAST

To the Editor—A married woman aged 28 has two children both delivered normally the last one four and one half years ago. For the past three years she has been aware of an annoying sensation and tenderness to touch in her right breast. This at first was very slight but has steadily increased so that the breast has been tender and somewhat painful for the last three weeks. The left breast is normal on examination and also subjectively. The right breast on palpation suggests to the fingers a mass of knots and cords throughout. These are quite tender to touch. There is no disturbance in the contour of the breast, the nipple is normal, the axilla is free of glands and there is no history of a discharge from the breast. Pain is not related to the menses. What would you advise in this case and if it is cystic mastitis have you any knowledge of the efficacy of theelin?

M D New York

ANSWER—The case raises three main possibilities (1) unilateral mazoplasia, (2) cystic disease of the breast, either in its pure form or complicated by epithelial neoplasia, and (3) unilateral diffuse fibro-adenomatosis.

As regards the first possibility, it is possible but unusual for mazoplasia to affect only one breast. The fact that the pain is not related to the menstrual period is further evidence against this diagnosis. Cystic disease of the breast is possible in this case. The evidences against cystic disease are the conditions found on palpation. Usually in the breast of pronounced cystic disease there should be present one or more discrete, circumscribed, movable masses. When the cysts are sufficiently small, these conditions are absent. From the description given, the diagnosis of fibro-adenomatosis is most likely. Transillumination might help to distinguish between cystic disease and solid fibro-adenomatosis. The age of the patient favors the latter diagnosis. Tenderness also is more common in fibro-adenomatosis than in cystic disease.

The procedure to be adopted depends on the diagnosis. If the lesion is diffuse throughout the breast and there is no localized mass, it is safe to treat the patient conservatively and to defer operation. The lesion should be watched closely and, at the first sign of localization, an exploratory operation is immediately indicated. If the breast is a fibro-adenomatosis, no operation is indicated. Not infrequently in these cases it becomes necessary to perform an exploratory incision and biopsy in order to establish the true diagnosis of the lesion as between cystic disease and fibro-adenomatosis. This procedure, however, is usually deferred as long as the lesion is diffuse and there is no localized mass.

Theelin and other estrogenic preparations have been used in the treatment of painful breasts, and relief of pain has been reported. It is important to point out, however, that the relief of pain from these agents is limited to a certain group of cases, notably those in which the pain is bilateral and is related to the menstrual periods. It is rare to find relief of pain when the periods are either normal or long and very common when the periods are of short duration.

USE OF FROZEN MILK IN INFANT FEEDING

To the Editor—We are anxious to have your opinion on the use in infant feeding, of milk that has been frozen. Does this frozen milk if heated to the boiling point and prepared for feeding in the usual manner produce an injurious effect on the otherwise normal healthy baby? Do you believe that heating the frozen milk to the boiling point causes the milk to return to a suspension that can be taken without ill effects by the average infant? Any information you can give us will be greatly appreciated.

ANN SULLIVAN Director Home Economics Washington D C

ANSWER—Milk as it freezes undergoes considerable physical changes, which are more pronounced the longer it remains frozen. Under no conditions is thawed milk exactly the same in every respect as unfrozen milk. Milk freezes at about 0.55 C, below the freezing point of water but it does not freeze completely, since the water freezes first and the solids form a more highly concentrated solution with a depression of the freezing point. Ice is formed at the bottom and sides of the vessel and a funnel-shaped cavity in the center is filled with liquid. The ice forms two layers one of cream the other of skim milk. The water thus freezes at first at the outside on the wall of the vessel, and the solids are forced toward the center, forming a more concentrated solution and this freezes at a lower temperature.

The fat rises and is partially churned when the milk freezes. The natural emulsion of fat is never completely restored after thawing, and the casein appears in flakes rather than in the original colloid condition. The fat content of the upper layers may be three times as high as the original amount, and much higher in the central portion of the milk than at the periphery. The emulsion of fat is destroyed more rapidly than the colloid condition of the casein. Other changes in the protein when

milk is held for a considerable period at a temperature of zero centigrade consists of a proteolysis of the casein and lactalbumin. Milk that has been frozen and then thawed is said to decompose more rapidly than otherwise. The thawed milk has a higher acidity than the original milk. Even at freezing temperature some bacteria continue to grow. It will not sour because the lactic bacilli do not grow at this temperature, but certain putrefactive and pathogenic organisms do.

Vomiting and not infrequently diarrhea may follow the feeding to infants of milk that has been frozen. The main cause of this is probably the separation of the fat, and even when the milk is thawed the fat globules coalesce and form a thick layer of butter fat, which may cause a gastro intestinal upset. If the process of thawing goes on slowly in a cool room, fewer changes remain in the fat emulsion.

FORMULA FOR ESTIMATING BASAL METABOLISM

To the Editor—Somewhere I have read that the basal metabolic rate can be estimated by a rather simple formula involving the blood pressure also a method involving the respiratory quotient. How are these estimations made? Are they sufficiently accurate to be of value? Please omit name.

M D Ohio

ANSWER—J Marion Read (Correlation of Basal Metabolic Rate with Pulse rate and Pulse Pressure, THE JOURNAL, June 17, 1922, p 1887) was the first to suggest the clinical use of a formula based on pulse rate and pulse pressure for the estimation of the basal metabolic rate. His first formula was $BMR = 0.683 (PR + 0.9 PP) - 71.5$

in which P R is the basal pulse rate and P P the basal pulse pressure. This formula was modified slightly by him in 1924 (Basal Pulse Rate and Pulse Pressure Changes Accompanying Variations in the Basal Metabolic Rate, *Arch Int Med* 34 553 [Oct] 1924) and again by Read and Barnett in 1934, in the latter report (Read, J M, and Barnett, C W. New Formulae for the Prediction of Basal Metabolism from Pulse Rate and Pulse Pressure, *Proc Soc Exper Biol & Med* 31 723 [March] 1934) they suggested two formulas, one for each sex.

For men, cal sq m per hour = $\frac{(P R) (P P)}{200} + 27$

For women, cal sq m per hour = $\frac{3 (P R) (P P)}{700} + 24$

Rabinowitch has recently presented a detailed criticism of this method of estimating the basal metabolism (Rabinowitch, I M. Prediction of Basal Metabolism from Pulse Pressure and Pulse Rate, *Canad M A J* 32 135 [Feb] 1935). He concludes that practically it is possible to predict the rate of metabolism with a reasonable degree of accuracy in only about 50 per cent of the cases provided the pulse rate and pulse pressure are obtained under the same strict basal conditions as are necessary for the determination of the basal metabolic rate itself.

Conroe has also recently investigated the clinical value of attempting to estimate the basal metabolic rate from the pulse rate and pulse pressure. He too feels that the accuracy of the prediction is not sufficiently great to render the method a substitute for actual measurement of the basal metabolic rate by indirect calorimetry. However, if one wishes to use such an approximation, Conroe gives a convenient nomogram in his paper to simplify the calculation involved (Estimation of Basal Metabolic Rate from Pulse Rate and Pulse Pressure, *Am J M Sc* 190 371 [Sept] 1935).

ISOPROPYL ALCOHOL

To the Editor—I would appreciate your giving me the latest information on isopropyl alcohol its chemical properties pharmacologic action toxicology and therapeutics with special attention as to its antiseptic properties and whether it can be used as a sterilizing agent for the hands and instruments.

M D Texas

ANSWER—Isopropyl alcohol, or dimethyl carbinol $CH_3CHOHCH_3$, is a homologue of ethyl alcohol isomeric with normal propyl alcohol. It is a colorless liquid having a weak alcoholic odor somewhat resembling that of acetone. It is similar in most of its properties to ethyl alcohol.

A paper giving a synopsis of the then available data on the pharmacology of isopropyl alcohol appeared in the *Journal of Laboratory and Clinical Medicine* March 1923, p 382. The toxicology of the substance has been discussed by Macht (*J Pharmacol & Exper Therap* 16 1 [Aug] 1920). The British Pharmaceutical Codex (1934) contains the following statement in regard to the actions and uses of isopropyl alcohol: "Isopropyl alcohol is twice as toxic as ethyl alcohol when given intravenously to cats, but it is sufficiently nontoxic for external and oral administration in small amounts. Inhalation of its

vapor has not been found to cause the defects on vision associated with methyl alcohol. Isopropyl alcohol is not potable and its ingestion produces a form of intoxication which resembles that produced by ethyl alcohol. In concentrations up to 50 per cent, applied externally to open wounds it allows healing to take place normally. It has been used for skin sterilization, also in antiseptic solutions for the throat. Isopropyl alcohol may be used for drying nitrocellulose, sugars, starches, animal or vegetable tissues, and for dehydrating histological specimens. It is used in cosmetics and the cheaper varieties of perfume and culinary essences.

We are informed that at the present time the Council on Pharmacy and Chemistry is considering the question of admitting isopropyl alcohol to New and Nonofficial Remedies as an agent useful in removing creosote from the skin and as a germicide for the sterilization of the skin as well as needles and syringes, particularly in connection with the administration of insulin.

In his report on the evidence submitted in favor of the use of isopropyl alcohol as a germicide, the Council's referee called attention to the lack of evidence for the effectiveness of the substance against the spores of *Bacillus Welchii*, *B. tetani* and *B. anthracis*. Although it was deemed a remote possibility that these spores might contaminate glass syringes in common use, the possibility of such contamination could not be denied. Hence, evidence on this point was requested but was not received. However, the evidence which was received did support the claim that isopropyl alcohol may be used for the reduction of the number of vegetative forms of bacteria on the skin, on hypodermic needles and on syringes. This evidence indicated that 10 per cent solutions of isopropyl alcohol are not germicidal, 20 per cent solutions are germicidal in some instances, and solutions containing 30 per cent or more of isopropyl alcohol regularly kill *Staphylococcus aureus* in five minutes at 20 C.

A review of experimental work on the germicidal properties of isopropyl alcohol by D. H. Grant was published in the *American Journal of the Medical Sciences* (166:261 [Aug.] 1923).

TREATMENT OF HYPERTRICHOSIS

To the Editor—What are the various treatments and their relative status for hypertrichosis in the female? I am inquiring about a woman aged 23, presumably in excellent health but with coarse hair on her face, chin and upper lip, arms and body. She had a thyroidectomy three and a half years ago; her basal metabolism now being plus 4. She had a tonsillectomy in 1932 and an appendectomy five months ago. She has an infantile uterus for which she has received five injections of Progenon B in oil. She has an infection of both antrums. A physician told her that she has a tumor of the adrenal glands. How can one establish a diagnosis of this type and if so what are the results of adrenal surgery in cases of this type? Kindly omit name and address.

M D Wisconsin

ANSWER—Hirsutism in the female may develop as a result of any one of several conditions. Among these are arrhenoblastoma of the ovary and certain tumors of the adrenal cortex, disturbances of the anterior pituitary may also be involved although the role of the pituitary in the growth of hair is as yet poorly defined. The differential diagnosis may be difficult. R. T. Frank (*Proc Soc Exper Biol & Med* 31:1204 [June] 1934) has reported two cases of adrenal carcinoma in which tremendous amounts of estrogenic substance were excreted in the urine; this may possibly serve in differential diagnosis as such amounts of estrogenic substance are not otherwise known to be excreted except during pregnancy. A discussion of arrhenoblastoma of the ovary by Emil Novak appears in the *American Journal of the Medical Sciences* (187:599) [May] 1934. Removal of such tumors of the ovary is reported to lead to regression of symptoms. Surgery on the adrenal glands should not be undertaken unless definite tumor exists; subtotal adrenalectomy has been proposed for the treatment of hirsutism in the absence of tumor but there is no justification for this procedure.

CORRECTION OF POSTURE

To the Editor—Will you give me the name and address of the best place to take care of correction of posture? Please do not publish my name.

M D New Jersey

ANSWER—Poor posture may result from faulty habits but not infrequently it is secondary to organic disorders that lower the vitality of the individual. Gastro-intestinal disturbances, chronic infections of the nose and throat, defects of vision, malnutrition and fatigue may all be contributory factors.

Organic changes within the spine itself, such as those due to tuberculosis or to growth disturbances of the type described as vertebral epiphysitis, may lead to permanent structural changes characterized by round shoulders or humped back.

For this reason every case of chronic poor posture should be carefully examined by a physician and roentgenograms of the spine taken before an attempt is made to correct the deformity.

The responsibility for directing the care of patients who have poor posture has been delegated to the orthopedic surgeon. Practically every orthopedic surgeon has available the services of a well trained physical therapist who understands the problem of prevention or correction of static deformities of the spine and extremities. A list of the men specializing in orthopedic surgery in any locality can be supplied to the physician requesting it by any of the following men:

Secretary of the Section on Orthopedic Surgery of the American Medical Association: Dr. Robert V. Funsten, University Va.
Secretary of the American Academy of Orthopedic Surgeons: Dr. Philip Lewin, 104 South Michigan Avenue, Chicago.
Secretary of the American Orthopaedic Association: Dr. Ralph K. Ghormley, 102 Second Avenue S.W., Rochester, Minn.
Secretary of the Orthopaedic Section of the Pan American Medical Association: Dr. Edward L. Compere, 970 East Fifty Ninth Street, Chicago.

MUSCLE FATIGABILITY

To the Editor—A man aged 33, 5 feet 11 inches (180 cm.) in height of the large boned type, weighing 285 pounds (93 kg.) complains of excessive fatigue. He is emotionally stable. His weight was 230 pounds (114 kg.) four months ago at which time he was definitely conscious of overweight and had the beginning of his fatigue. By diet and exercise the weight was gradually dropped to its present level. It seemed that after his weight began to drop below 220 pounds (100 kg.) his fatigue progressively increased. Now he complains of being tired at all times at the end of the day's office work; he can barely keep on his feet and he looks it. The blood pressure is normal, the basal metabolism is minus five (checked by different individuals and the record taken one month apart) and the blood sugar is 80. Everything else is normal and I have had my observations checked by two good internists. Thyroid was suggested for a try out and I gave 2 grains (0.13 Gm.) of a standard preparation three times daily for four weeks. This had no apparent effect on the fatigue but did increase perspiration and slightly accelerated the weight loss. The patient says he does not seem to have much choice—that when his weight is way up he feels puffed up like a swelling toad and has a little shortness of breath, and when his weight is where it is now he has fatigue that he cannot overcome. Suggestions will be gratefully received.

M D Virginia

ANSWER—The data are far too meager on which to base a diagnosis. Muscle weakness and fatigability are due to many causes, and the differential diagnosis of the various conditions is usually quite difficult. Myasthenia gravis, as well as other conditions, for example Addison's disease, should be considered. On the other hand, the patient may have simple fatigability. A suggestive symposium on some of the various forms of myopathy and the results of treatment in the different groups with fatigability was recently presented by Moersch, Boothby, Wilder and their associates (*Proceedings of the Staff Meetings of the Mayo Clinic* 9:589 [Oct. 3] 1934) which might furnish suggestions appropriate for the patient.

BURNING SENSATION IN MOUTH

To the Editor—Mrs. G. aged 64 complains of a severe burning sensation in the mouth of varying degree of intensity and apparently accentuated by certain foods, notably fruits. She cannot eat any of the citrus fruits because of the burning when attempts are made to eat them. Examination shows sclerotic, thrombosed or varicose areas on the sides and under parts of the tongue attended by redness about these areas and on the inside of the lower lip. There are no teeth, both upper and lower plates being worn. The buds on the back of the tongue are enlarged. The reaction as determined by the urine has been alternated between acid and alkaline without any appreciable change in the complaint. The blood pressure is 150 systolic, 90 diastolic. Treatment has consisted of potassium chlorate both in solution and as troches, Vinco and other perborates, potassium iodide and general systemic tonics. The condition has remissions and exacerbations without apparent relation to the diet. A Wassermann test has not been done. If you can help me out from this meager description it will be appreciated.

M D Ohio

ANSWER—Elderly patients complaining of burning sensations on the tongue and mucous membranes of the mouth accentuated by ingestion of certain types of food, are vexatious problems, as it is difficult to disclose even a trifling source of irritation. As in this case there usually are regions of the mucous membranes that have undergone various types of retrograde change. However, careful search should be made for some source of irritation. The artificial dentures are not above suspicion; the irritating effect of them being ascribed partly to the rubber content of the denture bases, partly to the heat insulating effect of the closely applied plate and partly to the mechanical effect of the denture surface, especially if it is not absolutely clean. The dentures should be painstakingly cleaned frequently, in this case after each meal. During the acute

exacerbations it may be desirable to wear the dentures as little as possible, perhaps not at all. There are no more suitable mouth washes than the flavored perborates. Other than this the treatment is purely symptomatic and designed merely to relieve pain and uncomfortable sensations.

HERPES AND CHICKENPOX

To the Editor—In answer to a question in Queries and Minor Notes on the treatment of herpes (THE JOURNAL January 4 p 65) the statement is made that herpes simplex the cold sore is truly related to the virus of chickenpox a fact discovered by Professor Bokay many years ago. I believe this to be an error that should be corrected. It probably meant that the virus of herpes zoster is related to that of chickenpox (von Bokay J. Ueber den aetiologischen Zusammenhang der Varizellen mit gewissen Fällen von Herpes Zoster *Wien klin Wchnschr* 22 1323 1909).

L WILLIAM ABRAMOWITZ MD New York

ANSWER—It is true that von Bokay's original observations, which date back to 1888 related chickenpox to herpes zoster and not to herpes simplex. It is customary to differentiate strictly between these two eruptions. Herpes simplex produces no immunity and tends to recur indefinitely, neuralgic pains are absent, it leaves no scar, its virus is easily transmissible. The opposite of all this is true of herpes zoster. Nevertheless, both are admittedly virus diseases due to an irritative, infectious or toxic lesion in the posterior root ganglion, in the posterior column of the cord as well as in the peripheral nerves. In herpes simplex, lesions have been found in the sensory extramedullary ganglions supplying the area involved (Ormsby Diseases of the Skin, Philadelphia, Lea & Febiger 1934). Essentially both lesions are due to efferent nerve impulses liberating a histamine-like substance in the skin, which in turn is responsible for the vesicle and the surrounding destruction of tissue. In cases of herpes simplex occurring with pneumonia or cerebrospinal meningitis, degenerative and inflammatory changes were found by Howard and by Mallory and Wright in the ganglionic centers supplying the area. This virus disease is neurotropic, the virus disease of herpes simplex is closely related to epidemic encephalitis.

MCCORMICK APPARATUS FOR ANALGESIA IN OBSTETRICS

To the Editor—In the Dec 21 1935 issue of THE JOURNAL an article appeared concerning the modified etheroil rectal analgesia by Drs Gwathmey and McCormick. I should like information as to where the McCormick apparatus for the instillation of the analgesia may be purchased with information as to price.

JAMES R JANNEY (fourth year student) Detroit

ANSWER—The McCormick apparatus for the rectal instillation of ether in oil is sold by the William H Armstrong Company Indianapolis, price \$20. The Asepto-syringe (4 ounce) is made by Becton, Dickinson & Co. Rutherford, N J price \$1.90.

EFFECTS OF LONG CONTINUED USE OF PHENOBARBITAL

To the Editor—What are the effects of the long continuous use of phenobarbital say from 3 to 5 grains (0.2 to 0.5 Gm) a day? What would be the effects on the sexual powers? MD Texas

ANSWER—Drowsiness and languor are symptoms of overdosage, dermatitis is a not uncommon complication. When phenobarbital is given in epilepsy, the indication is to lessen the dose or, if dermatitis occurs, to interrupt administration until it clears. Sexual power may share in the depression.

DIPHThERIA TOXIN FOR SCHICK TESTS

To the Editor—Kindly advise me regarding the reliability of 'Diphtheria Toxin diluted ready for use in peptone buffered diluent for Schick testing'.

WALTER J SIEVSEN MD Chicago

ANSWER—The product in question may be regarded as reliable, provided it is approved by the United States Public Health Service.

NO RECORDS OF ALLERGIC SENSITIVITY TO TRYPARSAMIDE

To the Editor—I am interested in securing information and references about anaphylactic reactions to tryparsamide. I have a case showing a definite allergic sensitivity to tryparamide. MD Nebraska

ANSWER—In many thousands of cases there are no records of allergic reactions with tryparsamide. The case reported is therefore unusual.

Medical Examinations and Licensure

COMING EXAMINATIONS

- ALASKA Juneau March 3 Sec Dr W W Council Juneau
AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Written examination for Group B applicants will be held in various cities throughout the country March 14 Oral examination for Group A and B applicants will be held in Kansas City Mo May 11 12 Sec Dr C Guy Lane 416 Marlboro St Boston
AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada March 28 Applications must be filed not later than February 28 Oral clinical and pathological examination of all candidates will be held in Kansas City Mo May 11 12 Applications must be received not later than April 1 Sec, Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)
AMERICAN BOARD OF OPHTHALMOLOGY Kansas City Mo May 11 and New York Sept 26 All applications and case reports must be filed sixty days before date of examination Asst Sec Dr Thomas D Allen 122 S Michigan Ave Chicago
AMERICAN BOARD OF ORTHOPAEDIC SURGERY Kansas City Mo May Applications should be filed with the secretary before April 15 Sec Dr Fremont A Chandler 180 N Michigan Ave Chicago
AMERICAN BOARD OF OTOLARYNGOLOGY Kansas City Mo May 9 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha
AMERICAN BOARD OF PEDIATRICS Kansas City Mo May 9 Sec Dr C A Aldrich 723 Elm St Winnetka Ill
AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY St Louis Mo, May 8 9 Sec Dr Walter Freeman, 1028 Connecticut Ave Washington D C
AMERICAN BOARD OF RADIOLOGY Kansas City Mo May 8 10 Sec Dr B R Kirklin Mayo Clinic Rochester Minn
ARIZONA Basic Science Tucson March 17 Sec Dr Robert L. Nugent Science Hall University of Arizona Tucson
CALIFORNIA Los Angeles March 9 12 Reciprocity Los Angeles March 18 Sec Dr Charles B Pinkham 420 State Office Bldg Sacramento
CONNECTICUT Regular Hartford March 10 11 Endorsement Hartford March 24 Sec Dr Thomas P Murdock 147 W Main St Meriden Homeopathic Derby March 10 Sec Dr J H Evans 1488 Chapel St New Haven
IOWA Des Moines Feb 25 27 Dir Division of Licensure and Registration Mr H W Grefe Capitol Bldg Des Moines
MAINE Portland March 10 11 Sec Board of Registration of Medicine Dr Adam P Leighton 192 State St Portland
MASSACHUSETTS Boston March 10 12 Sec Board of Registration in Medicine Dr Stephen Rushmore 413 State House Boston
NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II May 6 8 June 22 24 and Sept 14 16 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia
NEW HAMPSHIRE Concord March 12 13 Sec Board of Registration in Medicine Dr Charles Duncan State House Concord
OREGON Basic Science Portland March 21 Sec Mr Charles D Byrne University of Oregon Eugene
PUERTO RICO San Juan March 3 Sec Dr O Costa Mandry Box 536 San Juan
WEST VIRGINIA Charleston March 16 State Health Commissioner Dr Arthur E McClue Charleston
WISCONSIN Basic Science Madison, April 4 Sec Prof Robert N Bauer 3414 W Wisconsin Ave Milwaukee

California October Examination

Dr Charles B Pinkham, secretary, California State Board of Medical Examiners, reports the written examination held at Sacramento Oct 22-24, 1935. The examination covered 9 subjects and included 90 questions. An average of 75 per cent was required to pass. Forty-nine candidates were examined, 45 of whom passed and 4 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists	83 7	(1935)	83 1
Stanford University School of Medicine	83 9	(1935)	82 8
University of California Medical School	86 2	(1934)	88 7
University of Southern California School of Medicine	83 6	(1935)	83 6
University of Colorado School of Medicine	84	(1935)	84
Loyola University School of Medicine	81 7	(1935)	86 6
Northwestern University Medical School	82 3	(1935)	75 8
Rush Medical College	88 92 1*	(1927)	80 1
University of Illinois College of Medicine	76 2	(1935)	80 8
State University of Iowa College of Medicine	86 2	(1934)	81 7
Tulane University of Louisiana School of Medicine	89 2	(1933)	89 2
University of Maryland School of Medicine and College of Physicians and Surgeons	84 9	(1934)	84 9
Boston University School of Medicine	87 6	(1933)	87 6
Harvard University Medical School	84	(1933)	84
University of Michigan Medical School	84 9	(1935)	84 9
University of Minnesota Medical School	85 1	(1935)	85 1
Washington University School of Medicine	80 9	(1935)	80 9
Creighton University School of Medicine	84 7	(1935)	84 7
University of Oregon Medical School	86 3	(1934)	86 3
Hahnemann Medical Col and Hospital of Philadelphia	82 2	(1934)	82 2
Medical College of Virginia	89 9	(1935)	89 9
University of Toronto Faculty of Medicine			

Hamburgische Universität Medizinische Fakultät Ham- burg	(1923)	79	6†
Schlesische Friedrich Wilhelms Universität Medizinische Fakultät, Breslau	(1934)	84	2‡
Veremigten Friedrichs Universität Medizinische Fakultät Halle Wittenberg	(1925)	80	4‡
Université de Genève Faculté de Médecine	(1922)	77	6‡
School	Year	Per	Cent
University of California Medical Department	(1901)	51	7
McBarray Medical College	(193)	68	1
Johann Wolfgang Goethe Universität Medizinische Fakul- tät Frankfurt am Main	(1933)	62	9‡
Regia Università degli Studi di Modena Facoltà di Medicina e Chirurgia	(1932)	73	4

Thirteen physicians were licensed by reciprocity and 4 physi-
cians were licensed by endorsement from October 17 through
December 18. The following schools were represented

School	LICENSED BY RECIPROCITY	Year	Reciprocity
University of Colorado School of Medicine	(1927)	Grad	with Ohio
University of Illinois College of Medicine	(1930)	Missouri	
University of Kansas School of Medicine	(1933)	Kansas	
Johns Hopkins University School of Medicine	(1921)	Missouri	
Boston University School of Medicine	(1933)	Mass	
Harvard University Medical School	(1927)	Indiana	
Detroit College of Medicine and Surgery	(1930)	Michigan	
University of Michigan Medical School	(1925)	Michigan	
University of Minnesota Medical School	(1926)	Minnesota	
Washington University School of Medicine	(1934)	Missouri	
Creighton University School of Medicine (1931) Neb	(1932)	New Jersey	
University of Pennsylvania School of Medicine	(1929)	Penna	
School	LICENSED BY ENDORSEMENT	Year	Endorsement
University of Colorado School of Medicine	(1932)	N B M Ex	Grad of
University of Illinois College of Medicine	(1932)	N B M Ex	
Kansas City Hahnemann Medical College Missouri	(1912)	U S Army	
Ohio-Miami Medical College	(1914)	U S P H S	

* This applicant has completed the medical course and will receive
the M D degree on completion of internship.

† Verification of graduation in process. License has not been issued.

‡ Verification of graduation in process.

Puerto Rico September Report

Dr O Costa Mandry, secretary, Board of Medical Examiners
of Puerto Rico, reports the written and practical examination
held in San Juan Sept 3-7, 1935. The examination covered
19 subjects and included 80 questions. An average of 75 per
cent was required to pass. Sixteen candidates were examined
15 of whom passed and 1 failed. The following schools were
represented

School	PASSED	Year	Per
Georgetown University School of Medicine	(1920) 83	6	78
Howard University College of Medicine	(1935)		82
St Louis University School of Medicine	(1935)		93
University of Cincinnati College of Medicine	(1934)		84
Western Reserve University School of Medicine	(1935)		82
Hahnemann Medical Col and Hospital of Philadelphia	(1935)		81
Temple University School of Medicine	(1935)		81
Woman's Medical College of Pennsylvania	(1927)		79
Medical College of Virginia	(1934) 89	3	86
University College of Medicine Virginia	(1905)		78
Université de Paris Faculté de Médecine	(1933)		83
Universidad Nacional Facultad de Medicina Mexico D F	(1934)		75
Universität Bern Medizinische Fakultät	(1934)		84

School	FAILED	Year	Per
Hahnemann Medical College and Hospital of Philadelphia	(1909)		

* Verification of graduation in process

South Carolina November Examination

Dr A Earle Boozer, secretary, State Board of Medical
Examiners of South Carolina, reports the examination held at
Columbia Nov 12 1935. The examination covered 17 subjects.
An average of 75 per cent was required to pass. Three candi-
dates were examined, all of whom passed. Five physicians
were licensed by reciprocity after an oral examination. The
following schools were represented

School	PASSED	Year	Per
Tulane University of Louisiana School of Medicine	(1935)		75
Marion Sims College of Medicine Missouri	(1899)		78
Medical College of the State of South Carolina	(1935)		80
School	LICENSED BY RECIPROCITY	Year	Reciprocity
Georgetown University School of Medicine	(1923)	N Carolina	with
University of Georgia School of Medicine	(1934)	Georgia	
Jefferson Medical College of Philadelphia	(1933)	N Carolina	
University of Tennessee College of Medicine	(1933)	Tennessee	
University of Virginia Department of Medicine	(1931)	Virginia	

Book Notices

**Pediatric Treatment. A Manual of the Treatment of the Diseases of
Infants and Children Designed as a Reference Work Especially for the
General Practitioner and Physicians Entering the Field of Pediatrics.**
By Philip S Potter A B M D F A A P Attending Pediatrician to the
Berkeley General Hospital Berkeley, California. Cloth Price \$5. Pp
578. New York: Macmillan Company 1935.

This book is well indexed but is not illustrated. Illustrations
demonstrating such manipulations as manual expression of
breast milk, applications of a yarn truss, and passage of a
nasal catheter for gastric lavage or gavage in infants would
enhance the descriptive value. A short well selected pertinent
bibliography appends each chapter. As intimated by the author
in the preface and as apparent from a perusal of the book, it
is elementary, the A B C of pediatric therapy, written especially
for the general practitioner but particularly suited for young
men starting out direct from the hospital. The treatment is
mainly that used in the home, which is of course somewhat
different from that employed in the hospital by interns. The
first five chapters are devoted to general therapeutic pro-
cedures, including emergency treatment (poisoning, with anti-
dotes, wounds and so on) and pharmaceuticals. Some attention
is given here to nursing procedures, so that the physician can
actually instruct the mother or attendant rather than order the
trained nurse, as in the hospital. The chapter on infant feeding
is rather brief, although general principles and specific milks
are mentioned. It would be advisable for the reader to consult
more extensive works in this rather specialized field. Diets
for older children are given in detail. They are conservative,
most new foods being started relatively late, so as to play safe,
because of the considerable difference of opinion as to when
various foods may be introduced. After the sections on nutri-
tion, metabolism and their disorders, and disease and abnormali-
ties of the new born, the treatment of disease is taken up by
systems, then treatment of communicable and infectious diseases,
and finally a section on additional prescriptions relating to
body systems. The book is essentially and principally on treat-
ment, little space being given to symptoms and diagnosis, which
is admirable in a book entitled specifically treatment, so many
others of these being given over to much diagnosis.

In a general criticism of the book there seems to be a ten-
dency to overtreat specifically instead of outlining general
principles, many trained pediatricians not using nearly so exten-
sive a therapeutic armamentarium. The prescriptions are often
somewhat complicated, much simpler administration of fewer
drugs probably would suffice. Some drugs are advised that
some good pediatricians frown on, such as castor oil, mild
mercurous chloride and silver salts in the nose. For example,
in the treatment of colds, cathartics, hot foot baths, hot drinks
(try to get young children to take them), Dobell's solution
menthol in petrolatum, or mild protein silver in the nose, a
rather complicated prescription, and in cervical adenitis out-
ments are mentioned but their psychic value is not. The
reviewer and his immediate preceptors use much simpler
therapy, except where it is necessary for the mother's psychic
rather than the child's physical benefit, but maybe he is wrong.
Proprietary names are given to many drugs and foods. There
is not much space or emphasis devoted to psychic therapy or to
mental hygiene, behavior disturbances and the like, which make
up considerable of pediatric practice. Generally speaking it is
a reasonably good therapeutic textbook of pediatrics for young
general practitioners, although it makes treatment more com-
plicated than is actually encountered in pediatric practice.

Der Geburtstod (Mutter und Kind) Von Dr Sigismund Peller. Paper
Price 5 marks. Pp 110. Leipzig & Vienna: Franz Deuticke 1936.

This monograph consists mainly of extensive statistical
records of the mortality of mothers and babies throughout the
world and particularly in Vienna. While there is considerable
discussion of the figures presented the subject matter does not
lend itself to a thorough review. In the first place, inter-
national statistics are not comparable, as was well proved by
the Secretariat on Health of the League of Nations in Geneva.
It published a chart giving sixteen reasons for the inability to
compare international statistics. The larger part of this work
refers to infant mortality, and the fear of depopulation is

stressed. The author starts out with the statement that nobody knows how many women die during childbirth. He guesses that from 40,000 to 50,000 die each year in Europe and that 20,000 die in the United States. (The United States census says that only about 15,000 die annually), from 6 to 8 per cent of the babies die aborting, and in spite of the enormous progress made in all branches of medicine, and of all the commissions and investigations and laws promulgated, maternal and fetal mortalities have not improved. Abortion claims a large and undiminishing number of women's lives, and hospitalization has not improved the conditions. Maternal mortality the world over varies from 2 to 18 per thousand. Leningrad has the lowest, India the highest, the white race less than the colored, mortalities are generally higher in the city than in the country (abortion), of cities, Berlin has the highest mortality in Europe, excluding abortion, while they are included in the other cities. The mortality of babies can be reduced not by better care during labor but by improving the social conditions of gravidæ. The author recommends pregnancy hospitals. While much can be done for the mother with good antepartum care, asepsis and reduction of unnecessary operating, more can be done by combating criminal abortions and by recognizing that therapeutic abortions, when sensibly indicated and properly performed, may actually reduce both fetal and maternal mortality.

The Management of Colitis. By J. Arnold Bargen, M.D., F.A.C.P., Assistant Professor of Medicine, The Mayo Foundation, Rochester, Minn. National Medical Monographs. Edited by Morris Fishbein, M.D. Cloth. Price \$3. Pp. 234 with 94 illustrations. New York: National Medical Book Company, Inc. Doubleday, Doran & Co., Inc. 1935.

This is a short monograph discussing chronic ulcerative colitis, amebiasis, tuberculous colitis and mucous colitis. It is written in excellent style with a clear presentation of many controversial subjects. The material for the book is based on the author's and his colleagues' material gathered at the Mayo Clinic. In the opening chapter the anatomy, embryology and physiology of the colon are discussed with particular reference to their relationship with pathologic developments. The usual methods of study of a patient ill with diseases of the large intestine are mentioned, with emphasis on the important facts to be obtained. The chapter on chronic ulcerative colitis is lengthy, as one would expect from the author, because of his unusual grasp of the subject. He recapitulates his clinical and experimental evidence for a specific diplostreptococcus as an etiologic factor causing this disabling disease. His description of the pathologic features of the disease is excellent. The chapter on amebiasis contains a large number of observations of the author and of others. He suggests the use of emetine, organic arsenicals, such as carbarsone, and chiniofon, in addition to other methods of therapeutic approach to this stubborn disease. The chapter on tuberculous colitis is briefly but adequately discussed. The chapter on mucous colitis discusses the etiologic factors concerned in a disease that is not an inflammatory process of the colon. Little has been added to what is already known clinically and therapeutically about this syndrome. The book, as a whole, reflects the ability of the author to handle in a clear and fair fashion a subject that has been controversial for the most part.

Localized Rarefying Conditions of Bone as Exemplified by Legg-Perthes Disease, Osgood-Schlatter's Disease, Kummell's Disease and Related Conditions. By E. S. J. King, M.D., D.Sc., M.S., Honorary Surgeon to Out-Patients, Melbourne Hospital. Cloth. Price \$7.50. Pp. 400 with 70 illustrations. Baltimore: William Wood & Company, 1935.

This monograph comprises the greater part of the material that was submitted for the Jacksonian Prize of the Royal College of Surgeons in 1933 on "The Pathology, Diagnosis and Treatment of Localized Rarefying Changes in Bone as Exemplified by Legg-Perthes' Disease, Osgood-Schlatter's Disease, Kummell's Disease and Pathologically Related Conditions." The material was personally gathered from 160 cases chosen from a larger number encountered in hospital and private practice. The illustrations are taken from these cases. The consideration of the embryology and physiology discussed in section I has been given considerable justifiable prominence. In section II there is some overlapping, particularly with regard to hypotheses and the evidence on which these are based. Much of the evidence presented is roentgenologic and, therefore, special attention has been given to its evaluation. In many of the

current articles unwarranted deductions are drawn from roentgenologic appearances unsupported by pathologic or other observations. In addition to valuable research material on the subject, the author has presented many new points of view. The book is a treat to every one interested in the subject of bone and joint physiology, pathology and surgery. It is a fine book presenting various points of view on many controversial subjects. There is a comprehensive international bibliography.

The Principles and Practice of Medicine Designed for the Use of Practitioners and Students of Medicine. Originally written by the late Sir William Osler, Bt., M.D., F.R.S. Twelfth edition revised by Thomas McCrae, M.D., Fellow of the Royal College of Physicians, London. Professor of Medicine, Jefferson Medical College, Philadelphia. Cloth. Price \$8.50. Pp. 1196 with 22 illustrations. New York and London: D. Appleton-Century Company, Inc. 1935.

Osler's Principles and Practice of Medicine is one of the most widely known of medical books. Since 1892 it has been copyrighted fourteen times by the publishers, three times by Grace Revel Osler, and once by Britton Osler. The present edition has the same outward appearance as the early edition, and does not seem to be any larger. The book has been completely reset in a new type which permits more words to the page and is perhaps more easily read. Since Osler's death in 1916, numerous important discoveries have been made and many new methods and products have been put forth. Dr. McCrae, who worked with Osler and who revised this and various previous editions, has kept out of the book things that have little or no permanent value. He has emphasized the necessity of studying the patient as a human being as well as carefully observing all the manifestations of disease that the patient shows. While the aid that often comes from laboratory procedures and instruments is not undervalued, emphasis is placed on the training of clinicians, those physicians who learn everything possible about a patient by the use of their own senses and brains. The growth of medical knowledge has necessitated changes and additions in practically every part of this edition, especially in the discussions of diagnosis and treatment. Some sections are completely new or have been much changed. Among these are the sections on psittacosis, lymphogranuloma inguinale, undulant fever, arachnidism, purified protein derivative, tuberculin hypoglycemia, the digestive disturbances due to food allergy, narcolepsy, cysts of the lungs, aplastic anemia, agranulocytosis and Morquio's disease. The numerous subjects have been conservatively and soundly reviewed. The volume remains therefore a textbook of established knowledge which practitioners and students alike will find of great value.

Experimentelle Untersuchungen über Amöbenruhr. 2. Teil. Die experimentell erzeugten Veränderungen und die Pathogenese der Amöbiasis. Von Prof. Dr. Richard Bleiling. Beihefte zum Archiv für Schiffs- und Tropenhygiene, Pathologie und Therapie exotischer Krankheiten, Band XXX, Beiheft 2. Gegründet von C. Mense. Herausgegeben von P. Muhlens, Direktor des Instituts für Schiffs- u. Tropenkrankheiten, Hamburg. Paper. Price 4.80 marks. Pp. 60 with 29 illustrations. Leipzig: Johann Ambrosius Barth, 1935.

Fulminating amebic dysentery was produced in kittens by intrarectal inoculations of bloody mucous material from infected kittens as well as with cultures of *Endamoeba histolytica* grown on Dobell-Laidlaw's medium. Older larger cats were infected less readily. Ulcerations started in the mucous membrane just above the anal sphincter and below the ileocecal valve spread from these points to the entire large bowel. The ulcers extended downward and outward by lysis (to the mucosa, muscularis submucosa and serosa). The mesenteric lymph nodes as well as the blood stream may be invaded, resulting in liver abscesses. Amebic ulceration of the small bowel and stomach have never been observed in kittens. The younger the kittens, the shorter the period of incubation and the more rapid the course of the disease.

Puppies were similarly infected with similar anatomic results but the ulcers were not as deep or as severe, the disease was more chronic and there was a greater tendency to spontaneous recovery. The ulcers began as pin point, discrete hemorrhagic areas and then coalesced. The large bowel above the anal sphincter and below the ileocecal valve seems to be the most susceptible. The ulcerations may remain limited to those two

points, but usually the rest of the large bowel becomes involved. In dogs, amebic ulceration occasionally spreads to the small bowel and stomach. In dogs the submucosa is much more resistant to invasion by *Endamoeba histolytica* than in cats. Invasion of the blood stream and formation of liver abscesses were also more rare. Only once did the author observe amebic liver abscesses in dogs. A dog and a cat were infected by feeding human feces containing many *Endamoeba histolytica* cysts. Infections of rats, guinea-pigs, rabbits and monkeys were not successful. Other workers were successful in inoculating other animals: rats (Lynch), guinea-pigs (Baetjer and Sellards as well as Chatton), rabbits (Huber and Thomson) and monkeys (Dale and Dobell as well as Walker and Sellards). Older heavier animals are quite resistant to infection with *Endamoeba histolytica*. Cats are never infected spontaneously nor do they show cysts, whereas dogs are spontaneously infected from infected dogs as well as in nature by ingesting human feces containing *Endamoeba histolytica* cysts. Dogs infected for long periods developed a true immunity and allergic reactions—skin sensitivity to intracutaneous injections of *Endamoeba histolytica* antigen resulting in a local edematous, hyperemic wheal. Kittens fail to do that because the disease is of short duration.

The Growth of the Surface Area of the Human Body. By Edith Boyd. Assistant Professor Institute of Child Welfare and Department of Anatomy, University of Minnesota. With a foreword by Richard E. Scammon. Distinguished Service Professor in The Graduate Faculty, University of Minnesota. University of Minnesota. The Institute of Child Welfare Monograph Series No. 1. Cloth Price \$5. Pp 145 with 50 illustrations. Minneapolis: University of Minnesota Press 1935.

This monograph is a detailed study of the accuracy of prediction of the surface area from various types of mathematical formulas based on height, weight or other measurements. Including the surface area measurements made by herself and those culled from the literature, Boyd has measurements on 1,114 individuals, including the antepartum group, for comparison of the accuracy of the various prediction formulas.

The biologic and statistical significance of the various possible formulas will be of interest to those intensively working in this field. Boyd has shown that for the antepartum and postpartum period combined the surface area can be adequately represented on the basis of height and weight, by a self-adjusting power equation

$$S = 3.207W^{.72} - 0.0158106W^{1.13}$$

With this self-adjusting power equation the growth of the surface area is described in a manner similar to that of Scammon in "The Measurement of Man." It is found that growth may be represented by two asymmetrical sigmoid curves joined at about three years with inflection points at birth and puberty. The rates of growth in surface area of the parts of the body follow a developmental sequence from head to foot only during the circumpartum period.

For the postpartum period the surface area can be adequately predicted by the power equation

$$S = k W^a H^b$$

with or without the exponents restricted to exact bidimensionality according to the condition $3a + b = 2$.

Those who use the surface area method of predicting heat production (the basal metabolic rate) will be interested in knowing that the Du Bois height-weight formula is as good as any method but not statistically significantly better than the ones proposed by Meeh, Bardeen, Voit, Brody or Boyd.

Aus der Werkstatt. Von Alfred F. Hoche. Cloth Price 6 marks. Pp 294. Munich: J. F. Lehmanns Verlag 1935.

This is a collection of essays chosen from public addresses delivered by the author, a psychiatrist on numerous occasions since the year 1900. The material covers a wide range of interest from a psychiatric point of view and includes a great variety of subjects. The collection includes discussions on the influence of modern culture on nervous and mental health. Shakespeare and psychiatry, ennui, the shortcomings of the present psychoanalytic movement, the death of the mad king Ludwig, observations on aviation warfare, some humorous notes on currency inflation, and many other topics too numerous to mention in a brief review. This booklet is decidedly not a textbook nor will it greatly interest the general practitioner. It will, however, be a valuable addition to the library of a psychiatrist or to those interested in collateral reading of such subjects.

Principles of Bacteriology. By Arthur A. Eisenberg. A.B. M.D. Director of Laboratories Sydenham Hospital New York and Mabel F. Huntly R.N. M.A. Director of Nursing Wesson Memorial Hospital Springfield Massachusetts. With annotations and a section on Microbe Variations by F. E. Collen M.S. Ph.D. Professor of Bacteriology Vocational School Milwaukee Wisconsin. Sixth edition. Cloth Price \$2.75. Pp 378 with 98 illustrations. St. Louis: C. V. Mosby Company 1935.

This book was the outcome of the author's lectures to nurses at certain hospitals in Cleveland. He endeavored to supply certain detailed information which the student nurses were unable to find in the textbooks they were then using. The author prepared a book comprising his syllabus of lectures with additions, and written in simple language. This is the sixth edition of his book since 1918. He has made many changes among the most important of which were in the chapter on diseases due to animal parasites. He has rewritten the discussion on the role of the leukocytes in infection, presenting it now from the point of view of Schilling's hemogram. He adds a brief section on the reticulo endothelial system, the Neufeld method of sputum typing in pneumonia, brief discussions of psittacosis, brucella, and lymphogranuloma inguinale. There have been many changes also in the chapters dealing with typhoid, tuberculosis, diphtheria, meningitis and gonorrhea. The book has a number of illustrations and a glossary that is an attractive feature in the field for which the book was originally prepared.

Demonstrations of Physical Signs in Clinical Surgery. By Hamilton Bailey F.R.C.S. Surgeon Royal Northern Hospital London. Fifth edition. Cloth Price \$6.50. Pp 287 with 341 illustrations. Baltimore: William Wood & Company 1935.

This little volume is richly illustrated, most of the pictures being sharply and accurately explanatory of the points involved. A number of excellent color plates are included. The book is much more ambitious than its name implies, as it is an attempt to cover the field of surgical diagnosis in an abbreviated manner, including not only physical signs but also points in the history and an analysis of the patient's complaints. The author has indeed succeeded in collecting an imposing list of signs in surgical diagnosis. The only adverse criticism is that their value is in many cases not sufficiently discussed. To many of the signs are attached names which in a surprisingly high percentage are not associated with them, at least in the mind of an American surgeon. Furthermore, in a large number of cases the signs go under different names in other parts of the world. In many cases descriptions of signs and symptoms are given which, at least in the opinion of most surgeons today, are of little value. Few surgeons today would admit that adhesions about the appendix can be diagnosed by the referred pain when one presses on the left lower quadrant. Furthermore, it would be a courageous surgeon today who would undertake the diagnosis of chronic appendicitis. While the book may thus tend to give a false sense of the accuracy of diagnostic maneuvers and investigation it represents a long felt need as an epitome of surgical diagnosis. The mere fact that it has passed through so many editions and impressions is ample proof that it has been of service to many.

Die seröse Entzündung. Eine Permeabilitäts Pathologie. Von Dr. Hans Eppinger o. o. Professor Vorstand des I. med. Universitätsklinik, Wien. Dr. Hans Kaunitz und Dr. Hans Popper. Mit einem Anhang: Über den molekularen Aufbau der Eiweissstoffe. Von Dr. Hermann Mark o. o. Professor Vorstand des I. chem. Universitäts Laboratoriums in Wien und Dr. Anton von Wackel, Privatdozent Assistent des I. chem. Universitäts Laboratoriums in Wien. Paper Price 26 marks. Pp 298 with 124 illustrations. Vienna: Julius Springer 1935.

In this book the importance of the extracapillary circulation in the tissues is subjected to an elaborate and interesting consideration. Everywhere in parenchymatous organs between the capillary membranes and the parenchymatous cells is a space in which fluid circulates. Owing to differences in pressure and electrical potential, substances pass back and forth between the blood and the fluids in the tissues. Under abnormal conditions the capillary walls may become so permeable that they permit the plasma of the blood to pass into spaces in tissues, in consequence of which serious physiologic and morphologic disturbances may result. It is this escape of plasma rich in proteins and the consequences that is called "serous inflammation" in

the book a designation which the authors themselves regard as not wholly satisfactory because the primary change is not clearly of inflammatory nature in the accepted sense. The process in question has been spoken of elsewhere as an "albuminuria into the tissues," which also is unsatisfactory because there is no actual passage of urine into the tissues. The different aspects of abnormal accumulation of plasma in tissue spaces are considered in detail. Collapse is presented from the point of view that it may result from a diminution of the blood mass in the circulation due to passage of plasma into the tissues. The role of certain forms of poisoning in "serous inflammation" and collapse, the methods of analysis and treatment of "serous inflammation" in man, and the relations of "serous inflammation" to the lesions in serum disease, beriberi, exophthalmic goiter, pregnancy, cardiac insufficiency, cirrhosis of the liver and other forms of fibrosis are examples of the topics under discussion. The book is a valuable contribution to the study of the abnormal passage of plasma into the tissues.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice Court May Not Disregard Expert Testimony—The plaintiffs sued the defendant a physician, for malpractice. The jury returned a verdict for the plaintiffs, but the trial court, on motion of the defendant, granted a new trial. Thereupon the plaintiffs appealed to the district court of appeal, second district, division 1, California.

In the published report of this case there is no statement of facts involved in the alleged malpractice. The main point raised on appeal was whether or not the trial court abused its discretion in granting a new trial. An expert witness for the plaintiffs testified in the course of the trial, in answer to a hypothetical question, that in his judgment the treatment administered by the defendant was not such as would be commonly adopted and used by reputable physicians generally in the same locality, under the same or similar circumstances. This testimony for the plaintiffs was apparently the only evidence bearing on the negligence of the defendant. The defendant called no expert witness from whose testimony the jury could determine whether or not he used the care and skill required by law. In spite of the latitude permitted trial courts in the matter of granting new trials, said the appellate court, a trial court cannot disregard and ignore uncontradicted evidence which has been accepted as a fact by a jury, when such evidence relates to matters within the knowledge of experts alone. In *William Simpson & Co v Ind Acc Comm*, 74 Calif App 239 240 P 58, the industrial commission rejected the uncontradicted testimony of medical experts on what was the proximate cause of a death. On appeal the court, after citing several decisions, said

The rule to be drawn from these decisions as we understand them appears to be that whenever the subject under consideration is one within the knowledge of experts only and is not within the common knowledge of laymen the expert evidence is conclusive upon the question in issue. It follows that in such cases neither the court nor the jury can disregard such evidence of experts but on the other hand they are bound by such evidence even if it is contradicted by nonexpert witnesses. Under this rule the Commission in the present proceeding, could not reject the evidence of the medical experts when testifying upon any subject peculiarly within their own knowledge.

The defendant contended that the testimony of the expert witness in the present case was not of sufficient substance to sustain a verdict because the witness gave no reasons for his opinion. While it may be true said the court that an expert witness may give reasons for his opinion, he is not required to do so. The facts contained in the hypothetical question propounded to the witness are in themselves reasons for an answer. Furthermore the defendant had the undoubted right to probe for additional reason on cross-examination but he did not exercise that right.

The appellate court was of the opinion that the trial court abused its discretion in granting a new trial and therefore reversed the order to that effect—*Thomason v Hitchcock (Calif)*, 46 P (2d) 832.

Malpractice Liability of Original Tortfeasor for Malpractice by Attending Physician—The plaintiff fractured the bone of his right arm by a fall on ice on the outside stairway of the apartment house in which he lived. After filing a suit against the owners of the apartment house, he, in consideration of the payment of \$350, released them from all claims for damages growing out of the accident. Later he sued the physician-defendant in this case, who had treated the fracture, charging malpractice. The physician-defendant denied liability and claimed the benefit of the release that the plaintiff had executed, releasing the owners of the apartment house from liability. The trial court, on motion for judgment, dismissed the case, and the plaintiff appealed to the Supreme Court of Kansas.

As a general rule, said the Supreme Court, the plaintiff, if he exercised due care in the selection of his physician, might have recovered from the owners of the apartment house for the physician's negligence. While there is a division of judicial opinion with respect to this matter, the rule in Kansas has been laid down by the Supreme Court in *Keown v Young*, 129 Kan 463, 283 P 511, in which the court held

When one sustains personal injuries because of the negligence of another and uses due care in selecting a physician to treat his injuries and in following the advice and instructions of the physician throughout the treatment and a poor result is obtained because of the negligence of the physician the law regards the negligence of the one who caused the original injury as the proximate cause of the damages flowing from the negligence of the physician and holds him liable therefor.

When one sustains personal injuries by the negligence of another and settles his claim for damages against such party and executes to him a release and discharge of all suits actions causes of action and claims for injuries and damages which I have or might have arising out of the injuries such release covers and includes a claim for injuries resulting from the negligence of a physician called by the injured party to treat his injuries when there is no claim of a lack of due care in selecting a physician or in following his advice with respect to the treatment.

The trial court followed the rule thus laid down and held that the physician defendant in this case was acquitted of negligence and not liable for the consequences of it. The Supreme Court affirmed the judgment of the trial court—*Paris v Crittenden (Kan)* 46 P (2d) 633.

Society Proceedings

COMING MEETINGS

- American Association of Anatomists Durham N C Apr 9 11 Dr George W Corner 260 Crittenden Boulevard Rochester N Y Secretary
- American Association of Pathologists and Bacteriologists Boston Apr 9 10 Dr Howard T Karsner 2085 Adelbert Road Cleveland Secretary
- American College of Physicians Detroit Mar 26 Mr E R Loveland 133 South 36th Street Philadelphia Executive Secretary
- American College of Radiology Chicago, Feb 16 Dr Benjamin H Orndoff 2561 North Clark Street Chicago Executive Secretary
- American Orthopsychiatric Association Cleveland Feb 20 22 Dr George S Stevenson 50 West 50th Street New York Secretary
- American Physiological Society Washington D C Mar 25 28 Dr A C Ivy 303 East Chicago Avenue Chicago Secretary
- American Society for Experimental Pathology Washington D C Mar 25 28 Dr Shields Warren 195 Pilgrim Road Boston Secretary
- American Society for Pharmacology and Experimental Therapeutics Washington D C Mar 25 28 Dr E M K Geiling 710 North Washington Street Baltimore Secretary
- American Society of Biological Chemistry Washington D C Mar 25 28 Dr H A Matull Chemistry Bldg State University of Iowa Iowa City Secretary
- Annual Congress on Medical Education Medical Licensure and Hospitals Chicago Feb 17 18 Dr W D Cutter 535 North Dearborn Street Chicago Secretary
- Federation of American Societies for Experimental Biology Washington D C Mar 25 28 Dr E M K Geiling 710 North Washington Street Baltimore Secretary
- Nebraska State Medical Association Lincoln Apr 7 9 Dr R B Adams 15 N Street Lincoln Secretary
- Oklahoma State Medical Association Enid Apr 6 8 Dr L S Willour 203 Ainsworth Building McAlester Secretary
- Pacific Coast Surgical Association, Del Monte Calif Feb 20 22 Dr Edgar L Gilcrest 384 Post Street San Francisco Secretary
- Southeastern Surgical Congress New Orleans March 9 11 Dr Benjamin T Beasley 478 Peachtree Street N E Atlanta Ga Secretary

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

5 241 272 (Jan.) 1936

Dentistry in Its Relationship to Medicine and Public Health J N Baker Montgomery—p 241

Prevention and Treatment of Adynamic Ileus J Watson Anniston—p 245

Cesarean Section J E Garrison Birmingham—p 249

Newer Treatment of Syphilis W H Y Smith Montgomery—p 255

American Heart Journal, St. Louis

10 995 1146 (Dec.) 1935

Development of Mitral Stenosis in Young People with Discussion of Frequent Misinterpretation of Midsystolic Murmur at Cardiac Apex E F Bland P D White and T D Jones, Boston—p 995

*Influence of Heat Regulatory Mechanism on Raynaud's Disease H E Pearce Jr Rochester, N Y—p 1005

Effect of Ouabain on Electrocardiograms of Specific Muscle Lesions Jane Sands Robb M S Dooley J G F Hiss and R C Robb Syracuse N Y—p 1012

Results of Treatment in Cardiovascular Syphilis Report of Three Years Additional Observation P Padget and J E Moore, Baltimore—p 1017

Form of Electrocardiogram in Experimental Myocardial Infarction. IV Additional Observations on Later Effects Produced by Ligation of Anterior Descending Branch of Left Coronary Artery F N Wilson I D Johnston and I G W Hill Ann Arbor Mich—p 1025

Relation of Position of Heart to Initial Ventricular Deflections in Experimental Bundle Branch Block P C Foster New Orleans—p 1042

Anatomic and Hydrostatic Basis of Orthopnea and of Right Hydrothorax in Cardiac Failure W Dock San Francisco—p 1047

Follow Up Study of Sixty Four Patients with Right Bundle Branch Conduction Defect F C Wood W A Jeffers and C C Wolferth Philadelphia—p 1056

*Relationship of Heart Block, Auriculoventricular and Intraventricular to Clinical Manifestations of Coronary Disease Angina Pectoris and Coronary Thrombosis J Salcedo Salgar Bogota Colombia and P D White Boston—p 1067

Use of Ether in Measuring Circulation Time from Antecubital Veins to Pulmonary Capillaries W M Hitzig New York—p 1080

Influence of Heat Regulation on Raynaud's Disease—Pearse studied the influence of body heat regulation in four cases of Raynaud's disease. It was found that, (1) with the hands kept warm cooling the body will cause an attack of vasospasm, (2) warming the body will relieve an attack, (3) warming the body will not prevent an attack if the hands are exposed to cold, and (4) the warming effect of food was inadequate to influence the vasospasm. It is concluded that body heat regulation may have an influence on the vasospasm of Raynaud's disease. This constitutes further evidence that normal forms of stimulation may give rise to an exaggerated vascular response. It suggests that a local abnormality causes this excessive spastic reaction from several diverse motivating factors.

Results of Treatment in Cardiovascular Syphilis—Padget and Moore observed the course of 161 patients with frank forms of cardiovascular syphilis with reference to the effect of antisyphilitic treatment. Fifty-two of the patients had sacular aortic aneurysm. 109 had syphilitic aortic insufficiency. Fifty-three patients died in less than a year and are considered in a separate group as unamenable to the beneficial effects of specific therapy because of the gravity of their disease and its rapid progress. The 108 who survived for more than a year received varying amounts of antisyphilitic treatment. Of these fifty-three are considered in an "inadequate treatment"

group and fifty-five in an "adequate treatment group." The mean potential period of observation was ten years and eight months. The mortality rate for the poorly treated group was 137 times that of the well treated group in patients with aneurysm, 262 times as great in those with aortic insufficiency, and 202 times as great for the group as a whole. The deaths due to cardiovascular syphilis were 162 times as great in the poorly treated as in the well treated patients with aneurysm, 246 times as great in those with aortic insufficiency, and 206 times as great for the whole group. Seventy patients of the series are dead. The duration of life from onset of symptoms for those dead was 147 times as great in the well treated as in the poorly treated patients for the whole group, 171 times as great in those with aneurysm, and 137 times as great in the patients with aortic insufficiency. The latter figure is not of certain statistical significance. A restudy of Grant's cases of syphilitic aortic insufficiency was made. The mortality rate of his poorly treated group was 135 times that of those well treated, deaths due to cardiac disease were 178 times as frequent in the former as in the latter. No significant difference in the duration of life in his two groups was observed.

Relationship of Heart Block to Coronary Disease—Salcedo-Salgar and White determined the relative incidence of concurrence of auriculoventricular and intraventricular block as shown by electrocardiography, and of angina pectoris and of coronary thrombosis in 4,274 patients with cardiovascular symptoms or signs studied during the last fifteen years. Of these, 1,028 showed clinical evidence of coronary disease. 700 of paroxysmal angina pectoris, 169 of coronary thrombosis and 159 of paroxysmal angina pectoris and coronary thrombosis. Only 88 per cent of 700 patients with angina pectoris uncomplicated by clinical coronary thrombosis showed heart block, either auriculoventricular block (11 per cent) or intraventricular block (73 per cent), or both (14 per cent), and only 131 per cent of 328 cases of coronary thrombosis, with or without angina pectoris, showed heart block, either auriculoventricular block (36 per cent) or intraventricular block (89 per cent) or both (106 per cent). Conversely, of 117 patients with auriculoventricular block, only 94 per cent had angina pectoris without clinical coronary thrombosis and only 119 per cent more had clinical evidence of coronary thrombosis with or without angina pectoris, making a grand total of 213 per cent of cases of auriculoventricular block with clear evidence of coronary disease. Of 181 cases of intraventricular block of all grades, 298 per cent showed angina pectoris without clinical coronary thrombosis and only 93 per cent showed coronary thrombosis with or without angina pectoris. In both groups more than half of the patients had angina pectoris, coronary thrombosis or both. Coronary disease or other pathogenesis responsible for heart block, either auriculoventricular or intraventricular, does not run parallel to gross lesions of the larger arterial stems of the coronary circulation, the obstruction of which produces clinical evidence of coronary disease in the form of myocardial infarction. Intraventricular block was relatively almost as common in cases of angina pectoris without clinical coronary thrombosis as in cases of clinical coronary thrombosis without angina pectoris. The association of auriculoventricular and intraventricular block with coronary disease is frequent enough to be highly significant. The prognosis of either auriculoventricular or intraventricular heart block in older patients is about equally unfavorable whether or not there are associated clinical evidences of coronary disease. The authors conclude that the coronary supply to the auriculoventricular node and bundle and its branches is not necessarily blocked as a result of the lesion (thrombosis or embolism) which blocks the coronary supply to the areas of the heart (anterior apical and posterior basal portions of the left ventricular myocardium) most commonly affected in clinical coronary thrombosis but that such supply may be seriously involved by atherosclerotic or other processes with poor prognosis even when there is no associated angina pectoris or clinical evidence of sudden blockage of the anterior descending branch of the left coronary artery or of the main trunk of the right coronary artery.

American J Digestive Diseases and Nutrition, Chicago

2 593 650 (Dec) 1935

- Experimental Study of Visceral Disease M E Rehfuß and G M Nelson Philadelphia—p 593
- Cause of Faulty Digestion in Dogs Without Stomachs E S Emery Jr Boston—p 599
- Experimental Studies in Gastric Physiology in Man Mechanism of Gastric Evacuation After Partial Gastrectomy as Demonstrated Roentgenologically H Shav and J Gershon Cohen Philadelphia—p 608
- Role of Vitamin B₁ in Tonus of Large Intestine M I Sparks and E N Collins Cleveland—p 618
- *Colon Bacillus Vaccine Therapy as Related to Chronic Functional Diarrhea Chronic Headache Chronic Toxic Vertigo and Unstable Colon (Nonulcerative Colitis) J G Mateer J I Baltz J Fitzgerald and H L Woodburne Detroit—p 621
- Aseptic Electrosurgical Enterostomy New Method Preliminary Report L R Whitaker Boston—p 630
- The Hemorrhoidal Lesions Its Radical Cure by Submucous Injections With or Without Ligature Operation E A Daniels Montreal—p 631

Colon Bacillus Vaccine Therapy—During the last four years Mateer and his associates treated with Bacillus coli vaccine more than 1,000 selected cases of chronic functional diarrheas, chronic "toxic vertigo," long standing headaches of the type usually associated with chronic constipation or colon distress, and "unstable" colon. In 125 of these chronic and obstinate cases, vaccine treatment has been instituted in advance of other treatment. In the other subgroups, vaccine therapy has been postponed and subsequently instituted in obstinate cases in which symptoms have persisted after comprehensive therapy. In either instance the results directly traceable to Bacillus coli vaccine therapy can be identified. In thirty cases of chronic functional diarrhea, with an average duration of three and one-half years, Bacillus coli vaccine was administered in advance of any other therapy. There was improvement of the diarrhea in 93½ per cent of this group. There was complete disappearance of the diarrhea in 60 per cent and a marked degree of improvement in another 20 per cent of the group. In 40 per cent of the cases demonstrable improvement was noted after the first or second vaccine injection. In a group of cases of chronic headache, with an average duration of 117 years, and of the type usually associated with chronic constipation or colon distress, 75 per cent were relieved completely. In cases of toxic vertigo and chronic headache of four years' duration, marked or complete relief occurred in 87.5 per cent. In the occasional cases of obstinate spastic constipation, when Bacillus coli vaccine is added to the comprehensive therapy previously instituted there is convincing evidence that the vaccine tends to relax the partially obstructing spasm of the distal colon. In cases of "unstable" colon (non-ulcerative colitis) with obstinate distress or pain that persisted in spite of the usual comprehensive therapy, Bacillus coli vaccine was instituted subsequently. In 70 per cent of this group there was improvement or disappearance of the colon distress. Bacillus coli vaccine constitutes a valuable therapeutic aid if judiciously used in properly selected cases.

American J Obstetrics and Gynecology, St Louis

30 763 928 (Dec) 1935

- Further Studies on Mechanism of Labor W E Caldwell H C Moley and D A DeOpo New York—p 763
- *Treatment of Carcinoma of Cervix by Wertheim's Operation V Bonney London England—p 815
- Tuberculosis of Cervix Uteri V S Counsellor and D C Collins Rochester Minn—p 830
- Metabolism of Levulose VII Influence of Reproductive Cycle on Tolerance A W Rowe Mary A McManus and Gertrude A Riley Boston—p 841
- Ruptured Interstitial Pregnancy M Weinstein Long Island City N Y—p 849
- Embryonal Cysts of Cervix and Their Etiology Report of Two Cases J Kotz Washington D C—p 854
- Intra Uterine Gas Gangrene with Recovery W D Carrell Tucson Ariz—p 858
- Determination of Rupture of Membranes A G King Cincinnati—p 860
- *Prevention of Excoriation of Perineum from Silver Wire Sutures H Grad New York—p 863
- Control of Restlessness in Painless Labor R A Bartholomew and E D Colvin Atlanta Ga—p 866

Treatment of Carcinoma of Cervix—Bonney has performed Wertheim's operation 483 times for carcinoma of the cervix. The operation has been as drastic as possible, including the removal of most or all of the vagina and the extirpation

of the regional glands. He has classified his cases according to whether the regional glands removed at the operation were or were not carcinomatous. If the patients lost sight of and dying of other disease within five years of the operation are reckoned as having died of recurrence, the five year cure rate is 39 per cent, or, if they are dismissed from the calculation, between 41 and 42 per cent. The regional glands were carcinomatous in 42 per cent of the cases. The patients whose regional glands were growth free ran on the average an operative death risk of 9.8 per cent, in return for which they gained, depending on which of the two reckonings is employed, a 31 or 55 per cent chance of five year survival, whereas, on the average patients whose regional glands were carcinomatous ran a death risk of 20 per cent to gain a 22 or 23 per cent chance of five year survival. If patients who were lost sight of and dying of other disease are reckoned as having died of carcinoma, the ten year cure rate is 20 per cent, but, if they are dismissed from the calculation it is 33 per cent. Ten year cures are to be regarded as absolute cures. It is not, of course, impossible for recurrence to take place after that lapse of time but the author has not encountered it.

Prevention of Excoriation of Perineum from Sutures

—Grad has succeeded in eliminating pain due to excoriation and ulceration of the skin of the perineum and sometimes the anus from being in contact with the ends of sutures. The method consists in preparing a piece of rubber tissue like that from which surgeons' gloves are made. The piece should be 5 inches long and 3 inches wide. In its center, six or seven tiny holes are burned with the point of a pin brought to a red heat. A piece of rubber tubing one-half inch in diameter and 2 inches long, capable of maintaining its round shape, is prepared. On one side of the curve of the rubber tube six or seven tiny holes are burned in a straight line. On the side opposite the holes the tube is split through its entire length in a straight line, so that the tube can be opened up, and when pressure is released the tube closes up again. After the ends of the silver wire have been twisted, the rubber sheet is spread on the perineum and the ends of the wire are pulled through the small openings. The rubber tube is threaded on the silver wires. Over each wire is threaded a perforated lead shot pushed down in the lumen of the tube and made to grasp the wire by flattening the shot. The superfluous portion of the wire is then cut off flush with the perforated shot. The flattened shot holds the suture firmly and lies entirely within the lumen of the rubber tube and the ends of the suture and shot cannot rub against the patient's skin. The rubber sheet, which has first been placed on the perineum, is now tied over the rubber tube with a piece of silk.

American Journal of Ophthalmology, St Louis

18 1087 1178 (Dec) 1935

- Relation of Vitamin A to Anophthalmos in Pigs F Hale College Station Texas—p 1087
- Streptococcal Pseudomembranous Conjunctivitis Report of Case H C Kluever Iowa City—p 1094
- Lysozyme Content of Tears W M James St Louis—p 1109
- Bacterial Flora of Normal Conjunctiva Devorah Khorazo and R Thompson New York—p 1114
- Dacryostenosis in Children R O Riser Park Ridge Ill—p 1116
- Mechanism of Experimental Exophthalmos C F Code and H F Essex Rochester Minn—p 1123
- *Syphilis and Primary Glaucoma W Beckh Baltimore—p 1129
- Voluntary Control of Accommodation W Zentmayer Philadelphia—p 1134
- Recession Operation Criticism R O Connor San Francisco—p 1137
- Dissociative Influence of Normal Rabbit Conjunctiva on Beta Hemolytic Streptococci G H Gowen Chicago—p 1140

Syphilis and Primary Glaucoma—Beckh investigated the incidence of syphilis in a group of 288 white and seventy-seven Negro patients with primary glaucoma, representing all the public ward patients with primary glaucoma admitted to the Wilmer Ophthalmological Institute of the Johns Hopkins Hospital between October 1925 and February 1934. The incidence of syphilis in primary glaucoma has been compared with the incidence of the same disease in cataract. In the white patients the incidence of syphilis was found to be somewhat lower in those with primary glaucoma than in those with cataract and considerably lower than in a series of general medical admissions. In the Negro group the incidence of syphilis was higher in those with primary glaucoma than in those with cataract.

but still lower than in the general medical admissions. A comparison of the average age of the patients at the onset of glaucoma symptoms in the syphilitic and the nonsyphilitic groups showed that the white syphilitic patients were three years older than the nonsyphilitic when their glaucomatous symptoms appeared, while in the Negro patients there was no difference between the two groups. Of the twenty-two patients with primary glaucoma and syphilis, the syphilitic disease process was latent in eighteen. One patient had cardiovascular syphilis verified by necropsy and two had asymptomatic neurosyphilis, while cardiovascular syphilis was tentatively diagnosed in a fourth. A comparison of seventeen syphilitic cases treated by specific therapy and miotics and observed for an average of fourteen months with a series of fifty-two nonsyphilitic cases treated by miotics alone and adequately followed showed a somewhat poorer therapeutic response in the syphilitic group. This study has failed to present any evidence for the view that primary glaucoma is in any way related to syphilis.

American Journal of Physiology, Baltimore

114 1254 (Dec 1) 1935

- Specific Nature of Inhibition of Coagulating Effect Exerted by Tissue Extract on Plasma Resulting from Incubation of Tissue Extract with Blood Serum. C. Moore, V. Surrentz and L. Loeb. St. Louis—p. 1.
- Inhibiting Action of Cattle and Sheep Serum on Kidney Extracts of Cattle and Sheep. E. W. Thurston, J. E. Smadel and L. Loeb. St. Louis—p. 19.
- Experimental Production of Anemia in Dogs by Means of Black Tongue Producing Diet. T. D. Spies and A. S. Dowling. Cleveland—p. 25.
- Reaction of Chronic Spinal Animals to Hemorrhage. C. M. Brooks. Baltimore—p. 30.
- Forces Concerned in Absorption of Cerebrospinal Fluid. L. H. Weed. Baltimore—p. 40.
- Secretory Metabolism of Salivary Glands. D. Northrup. Chicago—p. 46.
- Effect of Epinephrine on Arterial and Venous Plasma Sugar and Blood Flow in Dogs and Cats. C. F. Cori, R. E. Fisher and G. T. Cori. St. Louis—p. 53.
- Afferent Function in Group of Nerve Fibers of Slowest Conduction Velocity. D. Clark, J. Hughes and H. S. Gasser. New York—p. 69.
- Discharge of Impulses from Pacinian Corpuscles in Mesentery and Its Relation to Vascular Changes. G. D. Gammon and D. W. Bronk. Philadelphia—p. 77.
- Changes in Electrical Resistance of Nerve During Block by Cold and by Heat. I. F. Hummon Jr. and T. E. Boyd. Chicago—p. 85.
- Electrical Activity of Human Motor Units During Voluntary Contraction. D. B. Lindsay. Boston—p. 90.
- Chemical Transmission of Vagal Effects to Small Intestine. H. Bunting, W. J. Veek and C. A. Maaske. Madison Wis.—p. 100.
- Hunger Diabetes and Utilization of Glucose in Fasting Dog. S. Soskin and I. A. Mirsky. Chicago—p. 106.
- Influence of Hypophysectomy on Gluconeogenesis in Normal and Depancreatized Dog. S. Soskin, I. A. Mirsky, L. M. Zimmerman and N. Crohn. Chicago—p. 110.
- Nature of T Wave Potentials in Tortoise Heart. M. R. Krasno, J. A. E. Eyster and C. A. Maaske. Madison Wis.—p. 119.
- Relation Between Viscosity of Blood and Relative Volume of Erythrocytes (Hematocrit Value). Kaare K. Nygaard, Marian Wilder and J. Berkson. Rochester, Minn.—p. 128.
- Synthesis of Neutral Fat by Intestine of Diabetic Dogs. S. Freeman and A. C. Ivy. Chicago—p. 132.
- Rate of Elimination of Dissolved Nitrogen in Man in Relation to Fat and Water Content of Body. A. R. Behnke, R. M. Thomson and L. A. Shaw. Boston—p. 137.
- Further Study of Electrical Responses of Smooth Muscle. E. F. Lambert and A. Rosenbluth with collaboration of H. Davis, A. Forbes and C. L. Prosser. Boston—p. 147.
- Methylene Blue and Hemoglobin Derivatives in Asphyxial Poisoning. Matilda Moldenhauer Brooks. Berkeley Calif.—p. 160.
- Afferent Functions of Nontmyelinated or C Fibers. G. H. Bishop and P. Heinbecker. St. Louis—p. 179.
- *Antanemic Treatment in Experimental Polycythemia. Louis Hanson. Marshall. Chicago—p. 194.
- Plasma Protein Regeneration After Bleeding in Rat. W. C. Cutting and R. D. Cutter. San Francisco—p. 204.
- Changes in Circulatory Effect of Potassium Salts Due to Epinephrine (Adrenalin). H. A. McGuigan and J. A. Higgins. Chicago—p. 207.
- Studies on Extrinsic and Intrinsic Nerve Mechanisms of the Heart. P. Heinbecker and G. H. Bishop. St. Louis—p. 212.
- Electrical Phenomena of Crustacean Nerve Muscle System. H. G. du Buy. Boston—p. 224.
- Effects of Ingestion of Nutritive and Nonnutritive Liquids on Diurnal Variations in Weight Loss. C. I. Hovland. New Haven Conn.—p. 235.
- Kinetics of Elimination of Substances Injected Intravenously (Experiments with Creatinine). R. Dominguez, H. Goldblatt and Elizabeth Pomeroy. Cleveland—p. 240.

Antianemic Treatment in Experimental Polycythemia

—To test the hypothesis whether the function of the liver is to reestablish the normal number of erythrocytes in the blood Marshall produced a sustained polycythemia in rats which were then treated with liver. The polycythemia was produced by

the administration of a milk diet supplemented by salts of cobalt, iron, copper and manganese. Red cell counts of blood obtained by heart puncture revealed a polycythemia of from 10.5 to 13 million cells per cubic millimeter, in contrast to from 7.5 to 8 million for the normal controls. The high erythrocyte count has been promptly lowered to an average of 87 per cent of its initial level within six days by daily injections of 0.25 cc of a concentrated liver extract. Controls receiving injections of saline or kidney extract maintained a count averaging 11.5 million. The fall in erythrocytes was only temporary, a return to above the initial level occurring although the liver extract was continued. Administration of desiccated hog stomach brought about a more gradual and less pronounced decrease in erythrocytes, which was maintained throughout the experiment. Feeding of fresh whole liver caused a temporary increase in the already high erythrocyte count, but no lowering occurred. Fresh lean meat produced no change. Certain similarities between cobalt polycythemia in rats and primary polycythemia as it occurs in man are discussed, and some of the theories of direct or indirect hormone control of the erythroplastic tissues are presented. The evidence presented is interpreted by assuming a hormone which originates in the liver and exercises an inhibiting action on hematopoiesis.

American Journal of Psychiatry, New York

92 509 762 (Nov.) 1935

- Megalomyelo Encephaly. Report of Case with Diffuse Medulloblastosis. A. Ferraro and S. E. Barrera. New York—p. 509.
- The Epilepsies. F. Kennedy. New York—p. 527.
- Follow Up Study of Hoch's Benign Stupor Cases. H. L. Rachlin. Ward's Island N. Y.—p. 531.
- Practical Considerations Relating to Family Care of Mental Patients. H. M. Pollock. Albany N. Y.—p. 559.
- Dynamic Concepts and Epileptic Attack. S. E. Jelliffe. New York—p. 565.
- Objective Interpretation by Means of Rorschach Test of Psychobiologic Structure Underlying Schizophrenia. Essential Hypertension. Craves Syndrome etc. Preliminary Report. A. W. Hackfield. Seattle—p. 575.
- First Year of the New Standard Nomenclature of Diseases in Massachusetts Mental Hospitals. N. A. Dayton. Boston—p. 589.
- Summary of Report of American Neurological Association Committee for Investigation of Sterilization. A. Myerson. Boston—p. 615.
- *Mental Disease Among Foreign Born Whites with Especial Reference to Natives of Russia and Poland. B. Malzberg. New York—p. 627.
- Androgynoid Characteristics in Case of Schizophrenia. Annette C. Washburne. Madison Wis.—p. 641.
- *Effect of Alcohol in Catatonic Syndromes. Preliminary Report. N. V. Kantorovich and S. K. Constantinovich. Leningrad U. S. S. R.—p. 651.
- False Concepts of Diseases or Conditions as Psychogenic Foci. L. H. Ziegler. Albany N. Y. and J. Heyman. Newark N. J.—p. 655.
- Dr. E. E. Southard's Scientific Contributions to Psychiatry. Appreciation After Twenty Years. L. B. Alford. St. Louis—p. 675.
- Psychologic Medicine as Practiced by the Quack. C. A. Rymer and Marion Reinhardt Rymer. Denver—p. 695.
- Physical Therapy in a Mental Hospital. R. H. Hutchings Jr. Wingdale N. Y.—p. 709.
- Instinctive Emotional and Mental Changes Following Prefrontal Lobe Excision. S. Ackerly. Louisville Ky.—p. 717.

Mental Disease Among the Foreign-Born—Malzberg investigated the rates of mental disease among Russians and Poles, in order to contrast the latter with other foreign groups and with native white subjects of native parentage. Exclusive of Italians, these two groups constitute the largest foreign born populations in New York State. There were 481,306 individuals in New York State on April 1, 1930, who were born in Russia, and they constituted 14.8 per cent of the total foreign born population. The Polish group totaled 350,383 on the same date representing 10.7 per cent of all the foreign born in New York State. The study indicates that natives of Russia and Poland had lower rates of mental disease than the other leading foreign born groups and that they even compared not too unfavorably with natives of native parentage. Their rates of mental disease were decidedly lower than those for natives of northwestern Europe. Invidious comparisons of the immigrant populations from a biologic point of view are unjustified. If some eastern European immigrants have lower rates of mental disease than immigrants from northwestern Europe, it is true also that Austrians and Hungarians have rates above the average. If some of the northwestern European populations have moderate rates of mental disease others such as the Irish and the Scandinavians have the highest. Within each of these broad aggregates of population there evidently are some groups

with high rates and others with low rates. It appears pertinent therefore to concentrate on the causes of variation within each group rather than to dispute endlessly over hypothetical racial causes of mental disease.

Effect of Alcohol in Catatonic Syndromes—Kantorovich and Constantinovich observed that alcohol often interrupts the course of catatonic stupor, producing a temporary, and sometimes lasting, cessation of mutism, torpor and negativism. Under such circumstances it often becomes possible to gain access to the content of the patient's psychotic trend as well as to facts of case history. Should further experience with alcohol in catatonic and hebephrenic cases yield similar results, the conclusion would be justified that a safe and simple procedure has become available as both a therapeutic and a diagnostic aid in the psychiatric clinic.

Annals of Internal Medicine, Lancaster, Pa

© 649 822 (Dec.) 1935

- Hemodynamics of Circulation in Hypertension J M Kinsman and J W Moore Louisville Ky—p 649
- *Vascular Disease in the Obese Diabetic and in Nondiabetics Discussion of Arteriosclerosis as Cause of Diabetes E C Beck J G Towler E C Koenig and B D Bowen Buffalo—p 662
- Studies Relating Vitamin C Deficiency to Rheumatic Fever and Rheumatoid Arthritis Experimental Clinical and General Considerations II Rheumatoid (Atrophic) Arthritis J F Rinehart San Francisco—p 671
- Effects of Chronic Disease of Liver on Composition and Physicochemical Properties of Blood Changes in Serum Proteins Reduction in Oxygen Saturation of Arterial Blood A M Snell, Rochester, Minn—p 690
- Hyperthyroidism Common Symptom R I Lee Boston—p 712
- Clinical Relationships of Blood Cholesterol with Summary of Our Present Knowledge of Cholesterol Metabolism L M Hurvthal and Hazel M Hunt Boston—p 717
- Blood Cholesterol in Disturbances of Basal Metabolic Rate L C McGee Elkins W Va—p 728
- *Use of Helium in Treatment of Asthma and Obstructive Lesions in Larynx and Trachea A L Barach New York—p 739
- Symptomatic Psychoses in Pernicious Anemia P W Preu and A J Geiger New Haven Conn—p 766
- Oleothorax Clinical and Experimental J N Hayes Sranac Lake N Y—p 779

Diabetes—Beck and his co-workers point out that calcification of the arteries of the lower extremities (demonstrated roentgenologically), which is so common particularly in uncontrolled diabetes among older persons is essentially absent in patients with early diabetes and obese people some of whom are potentially diabetic. No evidence was found to show that hypertension or retinal arteriosclerosis could be correlated with the obese patients' ability to use dextrose. The incidence of hypertension appears to be higher in older diabetic patients. This is essentially related to obesity and not to diabetes. Obesity, hypertension and diabetes appear to be unquestionably influenced by a hereditary factor. All three may be found together or in various combinations. It appears that obesity increases the likelihood of both diabetes and hypertension but it is less certain that the presence of hypertension contributes to the probability of diabetes, since the incidence of hypertension is about the same in the nondiabetic obese person as in the obese diabetic person. With the mechanism of the production of diabetes so incompletely understood its pathologic anatomy so variable and the possibility of extrapancreatic influences so definite, it is not surprising that many should regard the inception of diabetes as a functional disturbance. It may be more logical to think of it as a different reaction at various ages. It is conceivable also that the presence of vascular degenerative changes in the pancreas may be a factor in the production of diabetes but it seems unlikely that it is the sole cause. If it were so, diabetes in the aged and in patients with high grade hypertension should be more common unless an elective vascular disease of the pancreas exists. Also atherosclerosis in older people is more common in men than in women. Diabetes however in the same age group is more common in women.

Helium in Treatment of Asthma—Barach states that a mixture of 80 per cent helium and 20 per cent oxygen has one third the weight of a comparable volume of air. It was assumed that a relatively light respirable gas could be breathed with less effort in clinical conditions in which difficulty in ventilating the lungs was present. In four patients with severe

asthma, inhalation of helium-oxygen mixtures appeared to be of considerable benefit. When continuous asthma was present subjective and objective relief were obtained. In three cases a grave asthmatic condition and refractoriness to epinephrine were removed by inhalation of helium-oxygen mixtures. The acute attack of asthma was not aborted, and the relief obtained by inhalation of various mixtures of helium and oxygen was not sufficient to replace epinephrine when this drug was effective. The special value of helium-oxygen mixtures is in the treatment of asthma persisting after epinephrine and in status asthmaticus. Graphic records of the quantitative and qualitative changes in pulmonary ventilation revealed the following consequences of inhalation of helium-oxygen mixtures in a patient with continuous asthma: (1) decrease in pulmonary ventilation, (2) decrease in pulmonary pressure, (3) relative and absolute diminution in the length of expiration and (4) increased rest period between respiratory cycles. The decreased pulmonary pressure and the swifter flow of gas during the early phase of expiration would appear to lessen the likelihood of alveolar distention and emphysema in patients who have much continuous asthma. Severe obstructive dyspnea in two infants, one with laryngeal and the other with tracheal obstruction, was relieved by inhalation of helium-oxygen mixtures. In one of these cases, the infant was comfortable in a helium-oxygen tent for eight days, but the congenital nature of the obstruction was such as to require tracheotomy ultimately. In conditions of laryngeal or tracheal obstruction in which there is a possibility of the obstruction clearing up, the inhalation of helium-oxygen atmospheres may be useful by providing relief from a severe form of air hunger and its consequent fatigue of the respiratory musculature. The relief of dyspnea in patients suffering from various types of respiratory obstruction during the inhalation of helium-oxygen mixtures made evident the importance of an accustomed volume flow of gas to and from the lungs. This special equilibrium, i.e., the maintenance of a certain required pulmonary air flow, is regulated by proprioceptive reflexes from the lungs and the respiratory musculature. Disturbance in this equilibrium is the primary cause of the sensation of air hunger in this type of dyspnea, anoxemia may occur in severe cases as a secondary complicating factor.

Symptomatic Psychoses in Pernicious Anemia—Three cases of classic Addisonian pernicious anemia observed by Preu and Geiger are reported in which the psychoses seem clearly to bear a symptomatic relationship to the deficiency disease. The patients showed the fundamental symptoms of an organic psychosis. The first patient seemed confused on admission, and disorientation was observed on several occasions before improvement in the mental picture began. She was very easily fatigued, her attention was poor, and her intelligence was dull, but the authors did not feel that these features accounted for the disorientation and confusion. Memory seemed impaired at first but it gradually improved, as did the other organic mental symptoms under specific treatment. Although the second patient was clearly oriented on admission, disorientation for time and place was observed two days later as well as on several other occasions. Brief episodes of nocturnal confusion were observed which they believed likewise indicated clouding of consciousness. Memory seemed poor but showed no striking change and was difficult to evaluate because of the limited intelligence of the patient. The defects in orientation and the episodic confusion improved under treatment. The third patient was found to be definitely disoriented for time on a number of occasions, and recent memory defects were demonstrated repeatedly at times when her attention and cooperation were satisfactory. No improvement in the symptoms occurred during two weeks of specific treatment after which death occurred from a pulmonary complication. The opinion of the psychiatric staff was in favor of a diagnosis of symptomatic psychosis in all three cases on the basis of the organic symptoms discussed. The character and severity of the mental disturbances bore no consistent relationship either to the degree of anemia or to the extent of the neurologic manifestations. While this may appear implausible it seems to the authors fully as admissible as the well established observation that neurologic involvement varies independently of the state of the blood, subacute combined sclerosis sometimes appearing long before the actual develop-

ment of anemia Goldhamer and others have observed that cerebral manifestations may occur either alone or in association with cord disturbance, that they may be present with or without evidence of anemia, and that they may present themselves as the earliest and only manifestations of pernicious anemia

Archives of Pathology, Chicago

20 823 966 (Dec) 1935

- Parathyroid Glands II Histologic Study of Parathyroid Adenoma S Warren and J R F Morgan Boston—p 823
Cyanotic Atrophy of Liver W A Model Reconstruction C S Hagerty and J W Devereux Chicago—p 837
*Vitamin A Deficiency in Spite of Adequate Diet in Congenital Atresia of Bile Ducts and Jaundice M D Altschule Boston—p 845
Susceptibility to Dental Caries in the Rat VI Influence of Orange Juice and Acid Base Balance of the Diet T Rosebury and M Karshan New York—p 857
Renal Lesions Following Injection of Sodium Dehydrocholate in Animals With and Without Biliary Stasis H L Stewart and A Cantarow Philadelphia—p 866

Vitamin A Deficiency and Congenital Atresia of Bile Ducts—Altschule discusses the postmortem study of eleven infants with congenital atresia of the bile ducts. All had received diets adequate in vitamin A and none presented clinical evidence of xerosis or keratomalacia during life. Microscopic changes diagnostic of vitamin A deficiency, as defined by Wolbach and Howe, were observed in six, and the clinical histories and the necropsies in these six cases are presented. In each of these cases the family history was irrelevant. The deficiency apparently occurs as a result of failure of absorption of vitamin A from the gastrointestinal tract due to the absence of bile. There is evidence indicating that the parenteral administration of vitamin A is effective in patients in whom vitamin A deficiency develops as a result of severe obstructive jaundice. The oral administration of the vitamin together with bile salts also is possibly of value.

Arch of Physical Therapy, X-Ray, Radium, Chicago

16 705 768 (Dec) 1935

- Treatment of Erysipelas with Ultraviolet Radiation M E Knapp Minneapolis—p 711
Physical Therapy in Surgical Practice II H Ritter New York—p 715
Some Concepts of Prostatic Resection G J Thomas Minneapolis—p 718
Imitations of Prostatic Resection H C Rohnck Chicago—p 722
Short Wave Therapy W J Turrell Oxford England—p 724
Ultraviolet as a Bactericide A Bachem Chicago—p 733
*Desiccation of Hemorrhoids G D Graham Winnipeg Manit—p 741
Vacuum Type Wave Generator of Faradic and Cathodic Current R Kovacs New York—p 743

Desiccation of Hemorrhoids—In his desiccation method for hemorrhoids Graham uses about 2 ounces (60 cc) of a 1 per cent solution of procaine hydrochloride to which about 4 minims (0.3 cc) of epinephrine has been added. A 20 cc syringe with a 1½ inch, 22 gage needle is used for its injection. The skin is pierced by the hypodermic needle at the anterior anal margin and is carried up to and into the sphincter ani muscles, injection of the fluid being made as the needle enters. The needle is then almost withdrawn and its direction changed so that it is pushed laterally and posteriorly on each side of the anal margin. The needle is then completely withdrawn and a similar injection made at the posterior anal margin. In a very few minutes the sphincter muscles relax around the surgeon's finger and the external and semixternal piles can be turned out easily and a good view of them obtained. They are now ready to be desiccated. An diathermy machine with a good Oudin coil attached is suitable. Ordinary sewing needles from 2 to 4 inches long may be used. The current is turned on and the spark gap is adjusted so that the current will be of a strength to throw a spark about one eighth inch in length. The needle is inserted into the base of the pile about one eighth inch from its margin and is held steady until an area of desiccation appears in the form of a dirty gray color around the needle. In external and semixternal piles it suffices to desiccate around their base leaving them to slough off gradually. As much of the internal piles as can be reached should be desiccated through a speculum. A hemorrhoidal suppository is inserted and the operation is completed. Postoperatively a tablet containing an antipruritic and a half gram

(0.03 Gm) of codeine is prescribed for pain. Liquid petrolatum emulsified with agar-agar is ordered as a combination best preventing seepage from the intestine and promoting a gentle and soft intestinal motion least irritating to the inflamed parts. After the initial contraction of the piles there follows a reaction that causes swelling of the parts, and with large external piles the patient may be unable to replace them for about two days. If these become painful hot fomentos or sitting in a hot bath generally give relief. By that time contraction starts to take place, the swelling goes down rapidly and the piles can be replaced with ease. The patient is not hospitalized and remains at home for only three days preferably in bed.

Endocrinology, Los Angeles

19 633 746 (Nov Dec) 1935

- The Adrenal Problem I A Hartman Columbus Ohio—p 613
Atypical Familial Endocrinopathy in Males with Syndrome of Other Defects W A Reilly San Francisco—p 639
*Clinical Use of Emmenin (Human Placental Extract Collip) Minnie B Goldberg and H Lissner San Francisco—p 649
Effect of Ovarian Hormones and Ovarian Grafts on Mammary Glands of Male Mice W U Gardner New Haven Conn—p 656
Certain Factors Affecting Constancy of Impedance Angle A Barnett with assistance of S Bagno Brooklyn—p 668
Experimental Studies of Anterior Pituitary III Observations on Persistence of Hypophyseal Transplants in Anterior Eye Chamber H O Haterius M Schweizer and H A Charipper New York—p 673
*Laurence-Moon-Biedl Syndrome. Report of Three Cases M Molitch Philadelphia and Jamesburg N J R G Claden New Lisbon N J and A W Pigott Skillman N J—p 682
Further Observations on Treatment of Hyperinsulinism with Insulin H J John Cleveland—p 689
Syndrome Accompanying Deficiency or Absence of Ovarian Follicular Hormone. Study of One Hundred and Ninety Seven Cases A A Werner St Louis—p 695
Size and Structure of Thyroid Gland of Cat After Administration of Irradiated Ergosterol A M Lands and O O Stotland Lawrence Kan—p 701
Menopausal Hypertension R L Schaefer Detroit—p 705
Studies on Conditions of Activity in Endocrine Organs XXX Nervous Control of Anterior Hypophysis as Indicated by Maturation of Ova and Ovulation After Stimulation of Cervical Sympathetics H B Friedgood and C Pincus Boston—p 710

Clinical Use of Human Placental Extract—Goldberg and Lissner believe that they gave the alcohol soluble ether insoluble complex present in acetone extracts of human placenta (emmenin Collip) an adequate trial by employing it in 100 instances of various menstrual disorders, occurring in sixty-six women. It has proved helpful in restoring menstruation if periods have been absent less than a year. It is probably useless in amenorrhea of longer duration. In eight of nine cases of oligomenorrhea the menstrual interval was more nearly regularized. The same result was accomplished in seven patients whose menstrual interval was utterly irregular, sometimes too soon other times too late. Polymenorrhea was unaffected in the only three cases in which the preparation was used. Hypomenorrhea was definitely improved in nine of twelve cases. Menopausal symptoms and cyclic menstrual headaches were relieved in a fair majority of cases. In two of four cases of sterility, pregnancy occurred under its therapy. More than 60 per cent of forty subjects with severe dysmenorrhea were remarkably relieved. Psychic factors were rigidly excluded. This constitutes its most significant clinical usefulness.

Laurence-Moon-Biedl Syndrome—Molitch and his associates describe three brothers affected to a different degree with a hereditary cerebral defect. All three had polydactylism, mental deficiency, pituitary dysfunction and some visual defect. The oldest brother (aged 16) has also retinitis pigmentosa while the next oldest (aged 11) has a severe degree of myopia with a tessellated appearance of the retina. The youngest brother (aged 8 at death) had a mild visual defect with strabismus. It is concluded that all cases occurring in the same family and showing all or almost all the cardinal symptoms of the Laurence-Moon-Biedl syndrome should be so categorized. Isolated cases without other siblings being affected and not showing all the cardinal symptoms should not be included in the syndrome. Reilly and Lissner in their survey and summary of the literature concluded that the syndrome consists of six cardinal symptoms: obesity, mental deficiency, genital atrophy, polydactylism, retinitis pigmentosa and familial occurrence.

Florida Medical Association Journal, Jacksonville

22 239 284 (Dec.) 1935

- Boils and Carbuncles J R Chappell, Orlando—p 251
 Present Medical Trends H L Bryans Pensacola—p 257
 Management of Acute Gonorrheal Infections Personal Impressions
 Acquired from Fifteen Years Experience R J Holmes and M M
 Coplan, Miami—p 259
 Hoarseness M A Laschko Pensacola—p 263
 Repairs of Lacerations or Wounds G M Green Daytona Beach
 —p 265

Johns Hopkins Hospital Bulletin, Baltimore

57 317 408 (Dec.) 1935

- Spinal Cord of Finback Whale (Balaenoptera Physalus) Note W L
 Straus Jr Baltimore—p 317
 Fingeragnosia (Gerstmann) W Muncie Baltimore—p 330
 Researches on Tetanus IV Some Historical Notes on Tetanus and
 Commentaries Thereon J J Abel and Bettylee Hampill Baltimore
 —p 343
 *Compensatory Changes in Remaining Lung Following Total Pneumonec-
 tomy Experimental Study W F Rienhoff Jr Baltimore F L
 Reichert San Francisco and G J Heuer New York—p 373
 Experimental Gastrectomy Effects on Blood Morphology Especially
 When Complicated by Infection or Liver Damage H B Shumacker
 Jr and M M Wintrobe Baltimore—p 384

Compensatory Changes Following Pneumectomy—
 Rienhoff and his associates found that the compensatory
 changes in the remaining lung following total pneumectomy
 in dogs consist of simple dilatation of the respiratory lobules
 or the definitive respiratory units made up of the respiratory
 bronchiole, the alveolar ducts, the atria, the alveolar sacs and
 the alveoles. This dilatation comes in response to increased
 physiologic demands and is of a compensatory nature. It is
 not an emphysema and there is no interruption or diminution
 of the elastic tissue or fusion of the alveoles to suggest patho-
 logic change in the parenchyma of the lung. There is no
 increase in the number of the bronchial trees or in their pat-
 tern, and apparently the blood vascular system, except for a
 possible dilatation, is unaffected. No evidence of true hyper-
 plasia or hypertrophy was found. The lack of uniformity of
 dilatation of the alveoles in any one section was found to be
 due to the fact that the serial sections were cut through the
 alveoles at different levels of the block of tissue. The maximal
 diameter of different alveoles is, of course, situated in different
 planes.

Journal of Nutrition, Philadelphia

10 579 722 (Dec 10) 1935

- *Metabolism of Women During the Reproductive Cycle VI Case Study
 of Continuous Nitrogen Utilization of Multipara During Pregnancy,
 Parturition Puerperium and Lactation Helen A Hunscher Frances
 Cope Hummell Betty Nims Erickson and Icie G Macy Detroit
 —p 579
 Selenium in Proteins from Toxic Foodstuffs IV Effect of Feeding
 Toxic Proteins Toxic Protein Hydrolysates and Toxic Protein
 Hydrolysates from Which the Selenium Has Been Removed K W
 Franke and E P Painter Brookings S D—p 599
 Relation Between the Vitamin A and D Intake by the Hen and the
 Output in Eggs W C Russell and M W Taylor New Brunswick
 N J—p 613
 *Study of Nutritive Value of Mushrooms F W Quackenbush W H
 Peterson and H Steenbock Madison Wis—p 625
 Effect of Ingestion of Saline Waters on the Hydrogen Ion Concen-
 tration of Intestinal Tract Nitrogen Balance and Coefficient of Digesti-
 bility V G Heller J R Owen and Lucile Portwood Stillwater
 Okla—p 645
 *Differential Antirachitic Activity of Vitamin D Milks R W Haman
 and H Steenbock Madison Wis—p 653
 Studies on Growth III B and G Avitaminosis in Cecetomized Rats
 W H Griffith St Louis—p 667
 Id IV Vitamin B and G Content of Body Tissues of Normal and
 Experimental Rats W H Griffith St Louis—p 675
 Variability of Vitamin D Response with Temperature of Environment
 D Tourtellotte and W E Bacon Battle Creek Mich—p 683
 Editorial Review Absorption and Utilization of Carbohydrates H B
 Pierce Rochester N Y—p 689

Metabolism During Reproductive Cycle—Hunscher and
 her associates extended a case study over a period of eight
 years of child bearing and child rearing in a woman when she
 and her children were known to enjoy buoant health. Unin-
 terrupted nitrogen metabolic responses during the last half of
 fetal development and the physiologic preparation of the mater-
 nal body for lactation and the extension of these observations
 into parturition puerperium and eight weeks of lactation showed
 where some of the stresses and strains of maternity lay. The

results confirm previous considerations derived from intermit-
 tent balances in two former reproductive cycles in the same
 woman. During the last 145 days in gestation there was an
 average net storage of 31 Gm and a maternal retention of
 26 Gm of nitrogen daily, resulting in a total observed accu-
 mulation of 446 Gm at term. On the day of delivery the
 chemically determined maternal loss in blood, placenta, amniotic
 fluid and vomitus amounted to 46, 201, 008 and 024 Gm of
 nitrogen, respectively, the total loss from the body beyond the
 food consumed amounted to 546 Gm of nitrogen in addition
 to that contained in the fetus. The nine daily balances during
 the lying-in period showed an average daily loss of 5 Gm of
 nitrogen. From the tenth to the fifty-third day of lactation
 there was an average daily loss of 0.87 Gm of nitrogen. By
 the fifty-third day of milk flow the gestatory reserve nitrogen
 had been reduced by delivery, puerperium and lactation losses
 of 54.6, 44.6 and 38.3, respectively, leaving a total of 310 Gm
 of nitrogen stored only in the last half of pregnancy. When
 the approximate fetal content of 58.6 Gm of nitrogen is
 deducted from the final maternal reserve, the accountable losses
 of the reproductive cycle by the fifty-third day of lactation had
 left a maternal reserve of 250 Gm of nitrogen for future
 dissipation or enrichment of the maternal body at termination
 of the reproductive cycle.

Mushroom Protein Is Incomplete—Quackenbush and his
 co-workers studied the nutritive properties of the mushroom
Agaricus campestris by feeding the mushrooms to albino rats.
 Diets that contained mushrooms were consumed in subnormal
 quantities, and consequently growth was subnormal. Excep-
 tions to this general result were observed when mushrooms
 were fed to animals that were depleted in vitamin B or G.
 Mushrooms were found to be a relatively good source of vita-
 mins B and G. Levels of 10 and 5 per cent of the diet on a
 dry weight basis supplied sufficient vitamins B and G, respec-
 tively, to support satisfactory growth. The data indicate that
 a diet containing 10 per cent of mushrooms as the only source
 of vitamin B is deficient in some factor other than vitamin B
 or G. Mushroom protein is incomplete.

Antirachitic Activity of Vitamin D Milks—The results
 of the experiments of Haman and Steenbock show that for the
 chick and per unit of vitamin D 1 irradiated milk cod liver
 oil and irradiated cholesterol are of approximately the same
 order of effectiveness. 2 Yeast milk is approximately one
 tenth as effective as irradiated milk. This difference was
 confined to the respective butter fat fractions and was not
 influenced by the skimmed milk fraction. 3 The constituents
 of milk as a vehicle for vitamin D do not influence its effec-
 tiveness. 4 The experiments give no support to the possibility
 that the baby chick could be used to greater effectiveness than
 the rat for ascertaining the degree of antirachitic effectiveness
 of different vitamins D for the human being.

Journal of Pediatrics, St Louis

7 735 886 (Dec.) 1935

- The Physician's View of Health Examinations J D Boyd Iowa City
 —p 735
 *Congenital Scurvy Case Report Deborah Jackson and E A Park
 Baltimore—p 741
 *Scarlet Fever Immunization by Inunction M L Ripps Elizabeth
 N J—p 754
 Application of Recent Theories in Treatment of Undescended Teste
 J Huberman Newark N J and H H Israeloff Irvington N J
 —p 759
 *Suppurative Arthritis Due to Hemophilus Influenzae Case Report
 J C Peterson Nashville Tenn—p 765
 Allergic Bronchopneumonia H Miller G Piness B F Feingold Lo-
 Angeles and T B Friedman Chicago—p 768
 Adenomatous Polyp of the Right Main Bronchus Producing Atelecta-
 sis P Rosenblum and R I Klein Chicago—p 791
 *Third Generation Syphilis H A Rosenbaum and H L Faulkner
 Chicago—p 797
 Congenital Heart Disease Clinical Analysis of Seventy Five Cases from
 the Johns Hopkins Hospital C B Leach Providence R I—p 807

Congenital Scurvy—Jackson and Park discuss observa-
 tions on a baby of 20 days in whom the lesions in the bones
 were exactly like those present in the infant suffering from
 acquired scurvy. Every histologic manifestation in the skeleton
 found in acquired scurvy was present in this congenital case.
 lattice formation, fracture of the lattice with fibrinogen and
 collagen leakage, cessation of osteoblastic activity, destructive

processes in the sublattice region migration of the marrow cells from the ends of the growing bones with exposure of the embryonal-like connective tissue, internal and subperiosteal hemorrhage, and thinning and atrophy of the cortex in the lattice region with fracture. The authors state that the photomicrographs of the lesions in acquired scurvy compared with those of their case are so similar as to be interchangeable. There cannot be the slightest doubt, therefore, that the case reported is one of congenital scurvy. The severity of the lesion at the various cartilage shaft junctions corresponded with the rate of growth. If the rate of growth was slow enough at the end of a bone the signs of the disease did not appear. The case indicates that in scurvy the lattice must be so fragile that it cracks and breaks from the strain of ordinary movement or support of the arms and legs. Fractures of the lattice in scurvy are far more general than is popularly thought and are probably present in every case in which the disease has progressed far enough to be recognizable roentgenologically. They must precede epiphyseal separation for some time.

Scarlet Fever Immunization by Inunction—Ripps tested 564 children ranging in age from 1 to 16 years, 213 of whom were Dick positive. Most of these children were residents of four orphan institutions; the remainder were obtained from private practice and the hospital clinic. Dick toxin, prepared from the N Y 5 (Docher strain) of a potency of 24,000 skin test doses was mixed with 2 cc of plain rose water ointment or anhydrous wool fat. All the Dick positive children were given five massages over the entire back at intervals of one week. Preceding the rubs, the backs were cleansed with alcohol. For the first two rubbings, inunctions containing approximately 24,000 skin test doses were used and 28,000 skin test doses for each of the last three rubs. There were no general systemic reactions. About 20 per cent of the children showed a mild dermatitis over the parts rubbed after the first application, which was often associated with itching. With the succeeding massages, the skin reactions were less frequent. At no time was the dermatitis distressing. The eruption usually disappeared within two days. A total of 112 Dick-positive children completed the course of massages and were retested at various intervals. Of seventy-five children who received the rose water ointment inunction 66 per cent were immunized. Of thirty-seven children who received the anhydrous wool fat inunction 30 per cent were immunized. Twenty-one children ranging in age from 1 to $3\frac{1}{2}$ years were given rose water ointment inunctions containing 50,000 and 75,000 skin test doses for the first and second rubbings, and 100,000 for each of the remaining three rubs. Four of these were rendered Dick negative. Nine children, whose ages ranged from 4 to 10 years were given five rubbings at five-day intervals, the skin test doses being 50,000 and 100,000 for the first and second and 150,000 for the remaining three. Only one was immunized. Thirty-two children, who did not become negative after six months, were given three additional rubs with 50,000, 100,000 and 150,000 skin test doses. Only two of these had become negative when tested one year later.

Third Generation Syphilis—Rosenbaum and Faulkner believe that the two complete family histories which they give fulfil essentially the requirements for proving the existence of third generation syphilis. The grandmothers in both instances are still alive. In one a history of antisyphilitic treatment was obtained for her and her husband in 1910. In the case of the other there was no knowledge of syphilis until the authors' Wassermann and Kahn examinations of the blood were returned positive in 1933. Both the grandfathers are now dead. The causes of death cannot be ascertained, although both of them died suddenly at comparatively early ages. From these two unions which were in no way consanguineous, children and grandchildren have come under observation. All members of the second and third generations have been examined and male and female are affected. One member in each second generation escaped the infection. This member is flanked on either side by a brother or sister who has positive blood Wassermann and Kahn tests. The girls' two in each family have married and borne children. The husband in each case has remained negative clinically and serologically and none of them gave a history of syphilis. None of the women gave any history or evidence of having required syphilis yet each gave strong positive

Wassermann and Kahn reactions. One of these women, however, gave unmistakable evidence of congenital syphilis. She has definite pegging and notching of the upper middle incisors. Likewise her younger brother who is now 16 years of age, shows the same congenital stigma and has strongly positive Wassermann and Kahn reactions. Evidence of congenital syphilis in physical examinations has not been found in the four other members of the second generation. They have, however, positive Wassermann and Kahn reactions. One or more children from each of the four women of the second generation are under observation because of physical or serologic evidence of congenital syphilis. All the children of the third generation in one family showed this evidence early with physical stigmas and positive Wassermann and Kahn reactions. The children of the third generation in the other family show no marked stigmas.

Journal of Pharmacology & Exper Therap, Baltimore

55 377 492 (Dec) 1935

Wash Out of Cardiac Glucosides from Frog's Ventricle G. Kingsepp Tartu Estonia—p 377

Spinal Reflexes in Nicotine Poisoning T. E. Franke and M. Helen Denver St. Louis—p 390

Cinchophen and Paramethylphenyl Cinchoninic Acid Ethyl Ester (Tolysin). Comparison of Effects of Administration of Each in Rats H. G. Barbour and A. Gilman New Haven Conn—p 400

Study of Action of Drugs on Bell's Muscle—Muscles of Ureter C. M. Gruber Philadelphia—p 412

Studies of Phenanthrene Derivatives VI. Amino Alcohols of Ethanolamine and Propanolamine Type N. B. Eddy Ann Arbor Mich—p 419

Comparison of Actions of Dilaudid Hydrochloride and Morphine Sulfate on Segments of Excised Intestine and Uterus C. M. Gruber J. T. Brundage A. DeNote and R. Heiligman Philadelphia—p 430

Action of Posterior Pituitary Hormone on Blood Sugar of Rabbit H. C. Ellsworth Montreal—p 435

*III. Studies in Obesity. Effect of Dinitrophenol on Blood Velocity M. G. Wohl and L. N. Ettel on Philadelphia—p 439

State of Bismuth in Body Fluids and Tissues P. J. Hanzlik and A. P. Richardson San Francisco—p 447

The Fate of Procaine in the Dog J. G. Dunlop Rochester Minn—p 464

Effect of Dinitrophenol on Blood Velocity—Wohl and Ettelson determined the blood velocity in thirty-three obese patients. The basal metabolic rate of these patients varied from minus 25 per cent to plus 16 per cent, the average being minus 65 per cent. The average arm to tongue circulation time was 13.3 seconds. Obesity alone had no appreciable effect on the circulation time if it is assumed that the normal limits are between ten and fifteen seconds. In fourteen cases, dinitrophenol was administered orally in doses of 300 mg a day for periods varying from one to five weeks. In seven cases acceleration of the blood flow occurred averaging 3.3 seconds per patient, while in the remaining seven cases no significant change in the blood velocity could be demonstrated. In no instance was there a slowing of blood flow while dinitrophenol was administered. In the majority of the fourteen patients receiving dinitrophenol there were weekly losses of weight even though no attempts at restriction of diet and fluid intake were made. In other instances, however, the total loss of weight over a period of several weeks was no greater than that which has occurred on high protein, subcaloric diets without medication of any kind and in one patient a gain of $5\frac{1}{2}$ pounds (2.5 Kg) over a period of two weeks was observed, during which time the basal metabolism was at a level of plus 60 per cent. This patient consumed large quantities of fluids in an attempt to relieve epigastric burning sensations which the drug produced. In two cases in which several metabolism readings were made a drop was seen after the primary elevations caused by the drug. One patient, after four weeks of dinitrophenol, had a basal metabolic rate of plus 40 per cent. The drug was continued for two more weeks, at the end of which time the rate was plus 20 per cent. The course of the other patient was quite similar. The author cannot offer a satisfactory explanation at present for this fall in metabolism. Skin rashes occurred in six of the group, the incidence being higher than that reported by Tamter, Stockton and Cutting. In one patient the drug produced so many untoward symptoms that it was necessary to discontinue its use before blood velocity tests could be completed.

Journal of Urology, Baltimore

34 499 740 (Dec) 1935

- History of Western Branch Society American Urological Association M B Wesson San Francisco—p 499
- Unusual Conditions Simulating Perinephric Abscess Report of Ten Cases C F Rusche and S K Bacon Hollywood Calif—p 504
- Lymphatics of Lower Urinary and Genital Tracts Experimental Study with Especial Reference to Renal Infections D W Mackenzie and A B Wallace Montreal—p 516
- *New Surgical Procedure for Treatment of Polycystic Kidneys A E Goldstein Baltimore—p 536
- Compensatory Renal Hypertrophy R B Allen New York—p 553
- Anomalous Relationship of Right Ureter to Vena Cava A Randall and E W Campbell Philadelphia—p 563
- Cause and Treatment of Noncalculous Ureteropelvic Obstructions Report of Sixty Six Operated Cases R B Henline New York—p 584
- Total Urethrectomy in the Female New Technic H B Freiberg Cincinnati—p 615
- Atypical Carcinoma of Urinary Bladder Simulating Myosarcoma Report of Two Cases and Review of Literature S M Rabson New York—p 638
- *Summary of an Experimental Research on Control of Benign Prostatic Hypertrophy and Preliminary Clinical Report W E Lower W J Engel and D R McCullagh Cleveland—p 670
- Further Studies in Endocrinologic Relationships of Prostatic Hypertrophy Effect of Castration on Suburethral Glands in Posterior Urethra of the Rat C L Deming R H Jenkins and G Van Wagenen New Haven Conn—p 678
- Sarcoma of the Prostate in Infants Case Report and Brief Review of Literature E H Ray Lexington Ky—p 686
- Relation of Interstitial Cells of Testis to Prostatic Hypertrophy M Van Buren Teem, Rochester Minn—p 692
- *Carcinoma of Vas Deferens Report of Case G J Thompson and F Pilcher Jr Rochester Minn—p 714
- Injuries of Posterior Urethra H W Martin Los Angeles—p 718
- Urinary Proteins Appearance of Kidney Protein in Urine of Some Cases of Severe Chronic Glomerular Nephritis G Gilman Chicago—p 727

Surgical Procedure in Polycystic Kidneys—Although cases of unilateral polycystic kidneys are reported, Goldstein believes that the condition is always bilateral, either at the time of operation or subsequently. In view of the fact that medical regulation of the uncomplicated polycystic degeneration of the kidneys has not resulted in any considerable benefit to the patient, he feels that radical methods are indicated in many instances. If early surgery was performed in some of these cases before complications arise, life might be prolonged and much suffering avoided. When the abdominal route is employed, a pararectus high Gibson incision is made down to the peritoneum. The peritoneum is pushed medially and the kidney with its fatty layers is exposed. It is then freed laterally on each side. The true capsule is incised lengthwise, some of the cysts being opened. Numerous large cysts are then opened and the walls of many are excised. As many as possible of the cysts are drained. After this procedure the kidney cortex is split from one pole to the other. The incision should not go through the calices if possible, and certainly not into the pelvis. With the kidney split, more cysts are drained with the needle and syringe. The medial half of the longitudinal portion of the kidney is then sutured to all the layers of tissue above and medial to it, the peritoneum being pushed downward and inward. The other half of the longitudinal split portion is treated likewise. The wound is closed with interrupted plain catgut sutures. At the end of the operation the kidney is well immobilized and the split cortical portion is exposed. The split halves are approximated to the skin edges. Medially the peritoneum is underneath the muscular structure of the abdomen as well as being in close apposition to the hilus. Laterally the same situation exists, except that the kidney is not in apposition to the peritoneum. This leaves the organ free so that the cysts may be punctured with a needle and syringe under visualization at will, after healing. When the lumbar route is employed the same steps are carried out except that the immobilization is in the lumbar rather than the abdominal region. The entire length of the incision in the kidney in both instances is left open and sutured to the skin. Wet gauze is applied to the wound, which is kept open as long as possible. Granulation takes place in about four weeks after which the wound is permitted to heal over. This takes between six and ten weeks. A large scar forms over the wound.

Research on Prostatic Hypertrophy—Lower and his co-workers summarize the pertinent facts that have formed the basis for a theory as to the cause of benign prostatic hypertrophy

and constitute the background for the rationale of the therapy that they employed in a group of clinical cases. During the course of these and other experiments, evidence was produced that indicated the probability of the existence of a testicular hormone (which they call "inhibin"), which would depress the gonadotropic activity of the pituitary gland. Its clinical use was begun about ten months ago and forty patients with prostatic hypertrophy were treated with it. The ages of the patients ranged from 51 to 80 years. All cases presented the typical symptoms of prostatic obstruction, such as hesitancy, slowing of the urinary stream, nocturia and frequency. The majority of cases were hospitalized for preliminary investigation. After critical analysis of the forty patients, the authors consider twenty-six (65 per cent) markedly improved to the point at which they are virtually symptom free. Eight patients with complete retention now enjoy urinary comfort, five without any residual urine, two with only 30 cc and one with 50 cc residual urine. In all the other cases except one the residual urine has diminished or disappeared, and in that one only 30 cc was present at the beginning of treatment. Nocturia has been the symptom from which these patients showed the most consistent improvement though each patient made the unqualified statement that there was greater ease in voiding and a sense of complete emptying of the bladder. In many patients the kidney function improved and elevated blood ureas returned to a normal level. Many patients expressed a feeling of general well being and greater endurance. No improvement could be noted in fourteen patients. A careful analysis of the unimproved cases yields no consistent factor to explain their failure to respond. In general the symptoms were of longer duration, the average duration of symptoms in this group being 5.5 years as against 3.1 years in the improved cases. The incidence of urinary infection was relatively much higher. Five of the fourteen unimproved patients had large, atonic chronically overdistended bladders. A small sclerotic type of gland appeared to account for the failure in two other cases. From 10 to 20 per cent of enlarged prostates may be expected not to be benign enlargements, and this may account for some of the failures.

Carcinoma of Vas Deferens—Thompson and Pilcher point out that carcinoma apparently never develops as a primary tumor of the vas deferens. On first thought it would seem possible that carcinoma might frequently occur in the vas deferens as an extension of the malignant condition in the prostate gland, seminal vesicles or testes. The rarity of such extension, however, is attested by the fact that a thorough search of the literature disclosed only the references to Young, who found in a few cases, involvement of a portion of the vas deferens adjacent to the prostate gland. The secondary extension of prostatic carcinoma along the entire length of the vas deferens as far as the testes has never been described. Such a case, in which the process could be palpated within the scrotum is reported.

Laryngoscope, St Louis

45 911 980 (Dec) 1935

- The Sphenoid on Parade J A Cravanaugh Chicago—p 911
- Recording of Clinical Labyrinth Tests J H Hulka Long Island N Y—p 929
- *Analysis and Report of Ten Consecutive Cases of Sinus Thrombosis with Recovery C D Wolf New York—p 940
- Clinical Biochemistry in Treatment of Ear Nose and Throat Diseases T B Blackmar Columbus Ga—p 948
- Dry Mouth Vile Taste Calculus in Submandibular Gland P S Stout Philadelphia—p 962
- New Instruments J D Kernan New York—p 963
- New Instrument for Treatment of Peritonsillar Abscess I B Goldman New York—p 963

Sinus Thrombosis—Wolf accounts for the result in his ten consecutive cases of sinus thrombosis with no mortality as due in part to the following considerations: 1 The patients were in good general condition and were seen early in the course of the disease. 2 In all instances the involvement was unilateral thus pointing definitely to the side affected. 3 The splendid cooperation on the part of the laboratory, the house staff and the nursing staff was a factor of no mean importance in securing the favorable results. 4 In none of these cases was a mastoidectomy performed simultaneously with the obliteration of the lateral sinus and the ligation of the jugular vein. Thus prolonged operation with resultant shock to the patient and excessive loss of blood was avoided.

Medical Annals of District of Columbia, Washington
4 313 340 (Dec.) 1935

- *Meningococcemia Report of Two Cases One Fulminating with Rapid Death the Other with Evidences of Blood Stream Infection for Weeks Before the Onset of Meningeal Symptoms Recovery C B Conklin Washington—p 313
- Fundamentals of Internal Medicine Diseases of Nervous System A Schneider Washington—p 315
- Jaundice and Ascites with Recovery Report of Case J R Cavanagh Washington—p 322
- Congenital Arteriovenous Fistula Report of Case S Desoff and W A Angevine Washington—p 324

Meningococcemia—During the outbreak of meningitis occurring in Washington during the past winter and spring months Conklin encountered two cases that illustrate the overwhelming blood infection that sometimes occurs with early demise and the type with prolonged evidence of blood infection with later frank symptoms of meningitis followed by recovery. The first patient, when first seen, was evidently suffering from an acute infectious disease with hemorrhagic manifestations. Everything from typhus to drug dermatitis was suggested by those who saw him. Cerebrospinal meningitis was suggested despite the absence of neurologic clinical evidence. The blood culture and spinal fluid smears and cultures made the latter diagnosis certain. The other patient represents the type showing meningococcemia for days before meningitis develops. Although the organism was not recovered in this case, the resulting situation and the initial classic picture make the presence of meningococcus in the blood stream highly evident. The symptom grouping of irregular temperature, joint pains, chills and sweats and petechiae, all common factors in a number of infections of the blood stream, should call for frequent blood cultures with the idea in mind of the possibility of a meningococcal infection. When the patient was discharged from the hospital he was thoroughly clear mentally, able to stand alone and, except for nocturnal enuresis, in remarkably good condition. He had had thirty-one spinal taps, a total of 395 cc of antimeningococcus serum had been administered, and five blood transfusions, frequent intravenous injections of dextrose and two of magnesium sulfate had been given.

Missouri State Medical Assn Journal, St Louis

32 461 506 (Dec.) 1935

- Chronic Pyelonephritis in Infants and Children J R Caulk St Louis—p 461
- Anthomosis Schuller Christian's Disease J Dauksys Excel 101 Springs—p 466
- Principles of Safety in Thyroid Surgery C F Sherwin St Louis—p 473
- Clinical and Pathologic Studies of Coronary Disease Analysis of Eighty-Eight Cases Observed in One Thousand Necropsies E W Wilhelm and F C Helwig Kansas City—p 476
- Survey of Management of Intracapsular Fracture of Neck of Femur F D Dickson Kansas City—p 481

Chronic Pyelonephritis in Children—Caulk states that the most common cause of chronic pyelitis in infants and children is obstruction at the internal orifice of the bladder resulting from congenital valves or contractures. Regurgitation of the vesical contents into the ureters and kidney pelvis was present in 46 per cent of his twenty-six cases. One half of these occurred in the presence of a high, the remaining half with small, residual urine. Operations were performed on sixteen of these children, fourteen cautery punch and two suprapubic, six were for valves, one for valve and bar, seven for contractures of the vesical neck and two for lobules. The child's punch was used in nine instances and the baby punch in five. Thirteen of the operations have given perfect results. Two were decidedly improved but not completely satisfactory. The parents refused to allow further surgical procedures. One case in which there was pronounced spina bifida with a very thin delicate valve, was not improved. The removal of the valve gave no benefit. The results following the removal of the obstruction through the urethra in children by means of the punch have been the most gratifying that the author has had in surgery. The end results have been satisfactory. Invalid children have been restored to excellent health with practically no complications or untoward effects and with no mortality. This series of cases of obstruction of the neck of the bladder treated by transurethral removal is as far as he can determine, the only one so far reported. He urges the profession to suspect such mechanical causes for the majority of persistent or

recurrent cases of pyelitis in infants and children and to seek early investigation for such cases so that prompt corrective measures may be applied.

New England Journal of Medicine, Boston

213 1159 1214 (Dec 12) 1935

- Diaphragmatic Hernia in Children Report of Thirteen Operative Cases P E Truesdale Fall River Mass—p 1159
- Broncho copy and Differential Diagnosis of Tuberculosis Lung Abscess and Bronchiectasis G A Rice Holden Mass—p 1175
- *Progressive Idiopathic Pulmonary Fibrosis Associated with Emphysema A O Hampton Boston—p 1174
- Mycotic Infection of Lungs in Differential Diagnosis of Pulmonary Tuberculosis H J Bakst Boston—p 1177
- Differential Diagnosis of Pulmonary Tuberculosis and Pulmonary Circulatory Changes P D White Boston—p 1179
- Differential Diagnosis of Pulmonary Tuberculosis I T Ford Boston—p 1181
- Factors in the Management of Constipation T E Clow Wolfboro N H—p 1187

Progressive Idiopathic Pulmonary Fibrosis—Hampton discusses cases of chronic pulmonary disease about which little is known and which are often misinterpreted as pulmonary tuberculosis. Various other clinical diagnoses are made, such as asthma, bronchiectasis, heart disease, malignant conditions and pneumoconiosis. While he speaks only of cases in which postmortem examinations have been made, even a complete pathologic examination does not allow accurate classification. Most of the postmortem observations are similar and are characterized by diffuse interstitial fibrosis, distortion and dilatation of the bronchi, diffuse emphysema and, in the advanced cases, emphysematous blebs. The pulmonary changes seen at the routine roentgen examination, which are due to idiopathic fibrosis, are quite similar to those seen associated with tuberculosis. The chief difference is that usually tuberculosis is more localized and less likely to involve the entire lung fields. Fibrosis, however, may occur locally in both infraclavicular regions and, as in the case of pneumoconiosis, the upper lobes are quite commonly involved. Emphysematous blebs add to the confusion of the roentgen picture, in that they are often quite similar to the cavitation of tuberculosis. Pleural thickening and even pleural effusion are also common. The thin walled dilated bronchi and confluent emphysematous alveoli that occur often produce a diffuse honeycombed appearance on the roentgenogram. This picture is rarely seen in tuberculosis, and there are certain other helpful differential points in the roentgen examination which are obtained only by fluoroscopy and oblique and lateral roentgenograms.

Texas State Journal of Medicine, Fort Worth

31 483 544 (Dec.) 1935

- Treatment of Burns S J Seeger Milwaukee—p 488
- Diathermy in Treatment of Primary Pneumonia J G Jenkins Temple—p 494
- Irradiation Methods in Treatment of Cancer of Trachea and Lungs J M Martin Dallas—p 497
- Recognition of Radiology as One of the Specialties in Medicine C P Harris, Houston—p 500
- Obstetric Analgesia S E Russ San Antonio—p 501
- *Puerperal Eclampsia E L King New Orleans—p 503
- Preoperative and Postoperative Treatment in Gynecologic Patients H I Lancaster, Beeville—p 507
- Malformation of Vagina Report of Four Cases W F Armstrong, Fort Worth—p 511
- Diagnosis and Treatment of Trachoma E I Goar Houston—p 514
- Weather Condition and Blood Plasma Volume J H Black Dallas—p 516

Puerperal Eclampsia—King considers the prophylaxis of eclampsia under three heads: adequate antepartum care, prompt and adequate treatment of the toxemia and induction of labor in patients not responding satisfactorily to treatment. Eclampsia occurs in about 1 per cent of the cases coming to a maternity hospital and in from 0.1 to 0.2 per cent of patients in private practice. It is more frequently found in primiparas. The maternal mortality rate varies from 10 to 20 per cent, while the fetal rate is from 30 to 50 per cent. Once eclampsia has developed, a conservative plan of treatment should be adopted and carefully followed. In an occasional case cesarean section under local or spinal analgesia, may be performed. The summaries of the various conservative methods for the treatment of eclampsia given include the Stroganoff, Dublin (Rotunda), Schwarz-Dorsett, sodium amytal, Lazard and Miller and Martinez procedures.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

47 497 552 (Dec.) 1935

- Eczema Its Definition and Its Etiology H G Adamson —p 497
Definition and Etiology of Eczema J T Ingram —p 502
Panniculitis Its Place in Nosology H Keil —p 512
Paraffinoma Case M Bolam —p 523

British Journal of Radiology, London

8 733 796 (Dec.) 1935

- Lung Tomography G Grossmann —p 733
*Leukocytic Variations in Radium Workers (Part II) D R Goodfellow —p 752
Superior Pulmonary Sulcus Tumor A E Connolly —p 781
Action of X Rays on Lactate Glucose Citrate and Succinate Dehydrogenases R E Havard —p 787

Leukocytic Variations in Radium Workers—Goodfellow performed systematic blood counts at intervals of from two to four weeks on thirty-two workers in radium and x-rays. The periods of observation varied from six months to three years according to the duration of each individual's appointment. It has been found that there is only one sign of early overexposure that is common to all workers. This is a leukopenia due to a reduction in the number of circulating neutrophils. There is evidence that different individuals vary in their susceptibility to the effects of irradiation, and those who are more sensitive exhibit an absolute lymphocytosis with an absolute neutropenia as a first sign of overexposure. Others, who are less sensitive, exhibit a lymphocytopenia with a monocytosis under similar circumstances. Eosinophilia has frequently been seen as a result of overexposure, and abnormal or embryonic leukocytes have occasionally been seen in the blood of certain workers. Vacations of less than four weeks do not appear to be of value in restoring the leukocyte count of an overexposed worker to a normal level. The value of the information obtained by these routine blood counts has been greatly enhanced by periodic clinical examination of these subjects.

Guy's Hospital Reports, London

85 249 376 (July) 1935

- Sir Maurice Craig CBE MD FRCP H C Cameron —p 251
Chronic Constrictive Pericarditis I Introductory Note P D White —p 258
Id II Observations on Diseases of Orifice and Valves of Aorta (1842) N Chevers —p 259
Id III Adherent Pericardium as Cause of Cardiac Disease (1871) S Wilks —p 264
Id IV Biographic Note on Dr Norman Chevers M Campbell —p 274
*Aortic Stenosis Its Etiology and Morbid Anatomy A J Gibbs —p 275
Psychologic Approach to the Problem of Asthma and the Asthma Eczema Prurigo Syndrome C H Rogerson D H Hardcastle and K Duguid —p 289
Psychogenic Factor in Asthma Problem in Methodology E B Strauss —p 309
Ulcerative Colitis A F Hurst —p 317
Brittle Bones with Blue Sclerotics in Fifteen Members of a Family H G McGregor —p 356
Operative Treatment of Vertigo W M Mollison —p 361
Effects on Rabbit of Repeated Large Intravenous Doses of Glucose H E Harding —p 372

Aortic Stenosis—Gibbs studied and analyzed the clinical records and morbid anatomy of twenty-seven patients. Twenty six have died and the notes of the necropsies have been studied in fifteen of these the hearts had been preserved and were available for further examination. Of the two causes of aortic stenosis most likely to be encountered, rheumatism predominates in patients less than 50 years of age and arteriosclerosis in patients more than 50. Syphilis is practically never a cause, and congenital defects or infantile endocarditis only rarely. In the rheumatic group aortic stenosis is as common in women as in men, but in the arteriosclerotic group it is almost confined to men. Calcification of the valve cusps essential to the production of aortic stenosis in arteriosclerotic patients, may be a contributory factor in aortic stenosis of rheumatic origin though more commonly in men than in women owing to secondary arteriosclerotic changes. While calcification may result from diminished blood supply to the valve ring, as a result of

inflammatory or degenerative changes in the nutrient vessels, healed valvulitis and excessive strain also produce it, but at the free margin of the cusps instead of in the fibrous ring. The symptoms of aortic stenosis are in no way characteristic and the classic signs are often modified and obscured by the presence of other valvular lesions and by failing compensation. While the majority of patients suffering from rheumatic aortic stenosis in combination with mitral disease die at comparatively early ages (less than 50), having been invalids for a number of years, those patients suffering from arteriosclerotic aortic stenosis may live to a reasonable old age if careful to avoid any excessive cardiac strain.

Indian Journal of Medical Research, Calcutta

23 317 572 (Oct.) 1935

- *Pathology of Some Uncommon Enlargements of Lymph Nodes Illustrated by Five Cases A N Goyle A Vasudevan and K G Krishnaswamy —p 317
Bacteriologic Studies in Acute Lobar Pneumonia Due to Pneumococcus and Bacillus Pneumoniae Friedlander S S Bhatnagar and K Singh —p 337
Vitamin C Content of Some Indian Food Materials R K Chakraborty —p 347
Studies on Protein Fractions of Blood Serums Part IV Epidemic Dropsy R N Chopra, S N Mukherjee and J C Gupta —p 353
Opium Habit in India Studies on Physical and Mental Effects Produced by Opium Addiction R N Chopra and G S Chopra —p 359
Experimental Investigation into Action of Venom of Echis Carinata R N Chopra J S Chowhan and N N De —p 391
Morphologic Studies on Rabies Part II Negri Bodies in Hippocampus Major in Street Virus Infections H E Shortt —p 407
Presence of Leishmania Donovanii in Nasal Secretion of Cases of Indian Kala Azar H E Shortt and C S Swaminath —p 437
Hookworm Incidence and Intensity in South India by Districts W P Jacobs J F Kendrick and W C Sweet —p 441
Nonglucose Reducing Bodies in Blood Part II Vitamin C Fraction V K Narayana Menon —p 447
Hematologic Studies in Indians Part IV Fractional Gastric Analyses in Normal Indians L E Napier and C R Das Gupta —p 455
Note on Methylene Blue Reduction Test for Differentiating Between Coli and Aerogenes Types of Lactose Fermenting Organisms in Water and Feces T N S Raghavachari and P V Seetharama Iyer —p 463
Preliminary Epidemiologic Study of Cholera, with Especial Reference to Assam and Suggestions for Further Investigations E M Rice —p 467
Preliminary Note on Investigation of Trachoma by Technic of Culture on Chorio Allantoic Membrane of Embryo Chick C G Pandit R E Wright R Sanjiva Rao and Satyanathan —p 475
Absorption of Rice and Atta Protein in Digestion and Question of Fecal Residue as Medium for Intestinal Putrefaction H E C Wilson and S L Mookerjee —p 483
Some Possible Factors in Causation of Vesical Calculus in India Composition of Human Urine on Different Diets H E C Wilson and S L Mookerjee —p 491
Spectrographic Analysis of Thyroid Glands N K De —p 501
Vitamin A Activity and Ultraviolet Light Simple Spectrophotometric Method of Assaying Vitamin A and Carotene N K De —p 505
Effects of Some Products of Digestion and Accessory Substances on Rhythmic Contractions of Isolated Mammalian Intestines R K Pal and S Prasad —p 515
Applicability of Flocculation Tests for Standardization of Antivenene S M K Mallick —p 525
Serologic Variations in Vibrios from Noncholera Sources J Taylor and M L Ahuja —p 531
Population Problem in India A J H Russell and K C K E Raja —p 545

Pathology of Some Uncommon Enlargements of Lymph Nodes—Goyle and his associates discuss five cases of universal and local enlargement of lymph nodes. Histologically, the main features of the first case are hyperplasia of the bone marrow and the presence in the viscera of aggregations of small lymphocytes, many of which, however, lack the typical nuclear structure of the ordinary small lymphocytes. The hyperplasia has been regarded as lymphoblastic. The total number of leukocytes in the blood stream was not increased and the case has been diagnosed as aleukemic lymphadenosis. A discussion on the origin and nature of the proliferating cells is presented with the tentative conclusion that they are derived from the multiplication of the small lymphocytes. Two cases of endothelioma of lymph nodes by Ewing are cited. Littoral cell sarcoma appears to be a more suitable designation for tumors of this kind. In one case there was universal enlargement of the lymph nodes, in the other there was localized growth. Histologically, the cases are characterized by the presence of large polyhedral cells with hyperchromatic nuclei which show mitoses. In view of the resemblance of their microscopic picture to secondary

carcinoma a careful search was made for a primary focus, but none was discovered. Attention is drawn to some peculiar clinical and histologic features of this type of new growth and its association with chronic granulomatous infections. The other two cases are of systemic enlargement of the lymph nodes of neoplastic nature. The cells in one case were elongated and spindle shaped, whereas in the other they were more rounded but some of the cells were spindle shaped. Reasons are advanced for their derivation from the reticular cells. Tumor is named reticulum cell sarcoma. A classification of the hyperplastic and neoplastic conditions of the lymph nodes is given.

Irish Journal of Medical Science, Dublin

No 119 621 668 (Nov.) 1935

- Humanity's Debt to Animal Experiment W. Boxwell — p 621
Recent Developments in Prostatic Surgery T. J. D. Lane — p 639
Tendencies in Present Day Medicine V. M. Syngé — p 653
Portable Dark Room for Use in the Johannessen Operation — p 658
Serum Phosphatase Estimations in Cancer Cases E. Harvey — p 662

Journal of Tropical Medicine and Hygiene, London

38 289 300 (Dec. 2) 1935

- Insulin and Diets in Treatment of Diabetes Mellitus S. Vatcher and M. Douglas — p 289
Some Anomalies Met With in a Series of Three Hundred Bloods Examined with a View to Blood Grouping A. J. Noronha and L. B. Kothagi — p 295

Lancet, London

2 1155 1216 (Nov. 23) 1935

- *Integration of Endocrine System W. Langdon Brown — p 1155
Value of Gastroscopy H. C. Edwards — p 1161
Cysts of Semilunar Cartilage of Knee J. P. Horsford — p 1166
Incidence of Congenital Abnormalities in Genito-Urinary Tract as Seen in Five Hundred Consecutive Intravenous Pyelographies I. B. Barclay and J. B. Baird — p 1169
Use of Cambridge Electrode Jelly H. B. Russell — p 1172

Integration of Endocrine System — Langdon-Brown believes that there is an autonomous activity of the glands of the endocrine system according to the steady biochemical demands of the body but that their activity can be profoundly modified and extensively controlled by centers in the diencephalon which are largely concerned with emotional expression. These centers may operate directly through the sympathetic nervous system or indirectly through the chemical activities of the anterior pituitary. The anterior pituitary forms two basic secretions probably of a protein character, one being stimulating, the other inhibitory, in effect. They correspond to Sharpey-Schafer's original distinction between a hormone and a chalone. The former may be produced by the eosinophil, the latter by the basophil cells. These basic secretions are capable of chemical modification according to the needs of the body and are then ready to stimulate or restrain the secretion of simpler hormones by the other endocrine glands, including the postpituitary. It may be, as Zondek maintains that hormones circulate in an inactive form, becoming activated only when they reach their destination. This might explain some of the observations on the alleged hormone-antihormone linkage. Their destination is decided by some peculiar receptive capacity in the structure on which they act, catalytically or otherwise. What determines that receptive capacity is not known as yet. But the whole process appears to be a special case of the general law that nervous stimuli, whether passing from the diencephalon to the pituitary or down neurons to preganglionic and postganglionic endings, act through the intermediary of chemical substances locally produced. Further support for this view may be found in the fact that in one instance epinephrine is the final product of either hormone or nervous activity.

Congenital Abnormalities in Genito-Urinary Tract — In an analysis of 500 consecutive cases referred for intravenous pyelography, Barclay and Baird have found the following congenital and other abnormalities: unilateral fused kidney showing two normal ureteral orifices with the left ureter crossing to the right side, congenital absence of the left kidney with complete reduplication of the pelvis and the ureters of the right kidney, six cases of bilateral double ureters and pelvis (two with complete and four with incomplete reduplication), seven cases of unilateral double ureters and pelvis (two with complete and five with incomplete reduplication), a case of probable valvular ureteral obstruction and two cases showing unilateral true renal ptosis. The possible production of the foregoing anomalies is discussed.

Medical Journal of Australia, Sydney

2 643 674 (Nov. 9) 1935

- Some Aspects of Acute Nephritis in Children M. T. Cockburn — p 643
*Membranous Oropharyngitis B. Hiller — p 649
Influenza Virus Isolated from Australian Epidemic F. M. Burnet — p 651
Treatment of Prostatic Obstruction with Especial Reference to Endoscopic Resection I. B. Jose — p 653
Treatment of Acne Vulgaris with Especial Reference to X Rays J. C. Belisario — p 656

Membranous Oropharyngitis — During the last three years Hiller has observed five cases of a condition which he terms a membranous oropharyngitis. Actual organisms found on culture included hemolytic streptococcus, *Streptococcus viridans*, short-chained nonhemolytic streptococcus, *Staphylococcus aureus* and albus, and pneumococcus. The organism that appears to be the most consistently present is a short-chained nonhemolytic streptococcus. The condition is apparently mildly infectious, as shown by one case the patient having contracted it from her son. The signs and symptoms show a good deal of local discomfort and dysphagia, the latter being especially marked when the soft palate is involved. Sometimes slight enlargement and tenderness of the upper cervical lymphatic glands occurs. All cases seem to show a tendency for the membrane to appear at first on the anterior pillar of the fauces, usually in discrete patches which may spread to the soft palate, to the tonsil and occasionally to the posterior pillar of the fauces. But the favored direction of extension is to the gums and into the gingivolabial folds. The membrane is a false one, moderately thin, white and opalescent and always sharply demarcated, its edges being surrounded by a thin band of hyperemia. It lifts easily but is followed by very free hemorrhage from the whole of the bared surface, and it soon reforms. Recrudescence and recurrence are apt to occur. The diseases for which the condition may most easily be mistaken are diphtheria and Vincent's angina. The membrane is paler than is usual in diphtheria, it lifts much more easily and there is no constitutional disturbance. Further, there is more membrane present elsewhere than on the tonsils. A bacteriologic examination is always essential. Diphtheria antitoxin does not have the slightest influence on the condition. A combination of brilliant green and crystal violet is practically a specific for the condition. The following is the formula used for swabbing once or possibly twice a day: 2 per cent crystal violet, 2 per cent brilliant green, 48 per cent ethylic alcohol and 48 per cent water. This quickly clears up the faucial lesions, but those of the gums and the gingivolabial folds take longer. Overtreatment may be responsible for a prolonged course. In addition to the foregoing applications, the following paint is applied twice daily: 3 drachms (12 Gm.) each of tincture of ipecac and of solution of potassium arsenite and 1 ounce (30 cc.) of glycerin. In order to prevent infection of others, sterilization of the patient's articles should be enforced.

Japanese Journal of Experimental Medicine, Tokyo

13 591 750 (Oct. 20) 1935

- Studies on the BCG (First Report) K. Yanagisawa — p 591
Purification of Polluted Oysters Y. Tohyama and Y. Yasukawa — p 601
Inoculation Experiments with Human Leprosy in Rats II K. Nakamura, S. Kobashi and I. Matsumoto — p 619
Studies on Rat Trematodes N. Ishii — p 629
Observations on *Bacillus vaginalis* S. Okamoto — p 631
Experimental Studies on Differential Diagnosis Between Yaws and Syphilis I. Manifest Infection of Yaws in Mice S. Aikawa — p 637
Chemical and Biologic Examination of Acid Fast Bacteria II. Examination of Therapeutic Inhibiting Action of Development of Tubercle and Also of the Related Inhibiting Substance of Tubercle Bacilli Killed by Heat Y. Takeda, K. Ando, C. Hata and B. Miwa — p 641
Quantitative Relation Between Germicides and Bacteria and Contribution to Knowledge of Nature of Germicidal Action C. Miyawaki — p 661
Studies on Virus of Lymphogranuloma Inguinale Nicolas Favre and Durand. Third Report. Studies on Filtration Especially Ultrafiltration of Virus Y. Miyagawa, T. Mitamura, H. Yaei, N. Ishii and J. Okanishi — p 723
Id. Fourth Report. Cultivation of Virus on Chorio Allantoic Membrane of Chicken Embryo Y. Miyagawa, T. Mitamura, H. Yaei, N. Ishii and J. Okanishi — p 733
Id. Fifth Report. Resistance of Virus to Heat, Cold and Desiccation. Virus Dilution Experiment. Virulicidin and Allergene Neutralization Y. Miyagawa, T. Mitamura, H. Yaei, N. Ishii and J. Okanishi — p 739

Presse Medicale, Paris

43 1889 1912 (Nov. 23) 1935

- *Nonurate Azotemia and Its Treatment by Urea and Liver Extracts
W. Nonnenbruch and J. Weisev —p. 1889
Efficacy of Acetylcholine in Treatment of Traumatic Epilepsy, Fribourg
Blanc Lassalet and Passa —p. 1892

Nonurate Azotemia—Nonnenbruch and Weisev calculated the blood urea by the xanthidrol method of Fosse or the micro method of Bang. The total nitrogen was determined in the trichloroacetic acid filtrate by the semimicro method of Kjeldahl. By these means they were able to measure the relative proportions of urea and nonurate nitrogen. Their observations were therefore divided into those in which there was a primary variation in the urea level and those in which the residual nitrogen was the first to vary. They concluded that increase of the residual nitrogen corresponds in liver disease to a lowering of the general condition and reveals a disorder of protein metabolism. The increase in residual nitrogen can also be the result of excessive urea elimination in the course of polyureas. An elevated level of nitrogen can be lowered by all the procedures which increase the level of urea that is accompanied by improvement of the general condition. Increase in the residual nitrogen produced by the administration of amino acids produces a decline in the general condition. Urea, on the contrary, even in small doses, can produce a sudden drop in the residual nitrogen and improve the general condition. In all cases of increased residual nitrogen and especially in liver disease, attempted treatment with urea and hepatic extracts is indicated.

Revue Médicale Française, Paris

16 697 788 (Nov.) 1935

- Appendicitis and Colitis Bergeret and Caroli —p. 703
Treatment of Tuberculous Salpingitis A. Richard —p. 707
*Treatment of Late Bone Inflammations of War Sarroste —p. 707
Surgery of Diaphragm G. Menegaux —p. 719
Surgery of Meckel's Diverticulum S. Huard —p. 727
Treatment of Gastroduodenal Hemorrhages of Ulcerous Origin H. Redon —p. 733
Difficulties of Treatment of Certain Severe Hyperthyroidisms S. Blondin —p. 737

Treatment of Bone Inflammations of War—The men who sustained fractures during the war which in subsequent years caused pain, fistulas and other signs of nonhealing are the subject of Sarroste's study. He believes that the term chronic traumatic osteomyelitis is inexact and that the appellation given by him is more appropriate. Four clinical forms can be identified: late single infections, multiple infections, permanent fistulization and intra-osseous abscess. The infection progresses from the surface of the bone into the deeper portions, following the fissures and resulting in local calcium disorders, vascular changes and necrosis. Hence the two classic reactions of bone are present side by side—rarefaction and condensation. Treatment of these late processes has always been difficult and unsatisfactory. A judicious prophylactic treatment of a recent fracture would seem to be the most important factor. In spite of careful handling, these late lesions have occurred in about 30 per cent of the war fractures. The principal methods of treatment of these are the biologic with serums or vaccines, surgery of varying extent and physical therapy. The author feels that carefully chosen surgery is the most important of these methods.

Schweizerische medizinische Wochenschrift, Basel

65 1221 1240 (Dec. 21) 1935

- Functional Effects of Radiation Therapy A. Roschet —p. 1221
*Venous Pulse O. Merkelbach —p. 1225
Question of Suitability of Unguentum Refrigerans of Pharmacopoeia Helvetica V. as Cooling Ointment W. Lutz and A. Haenel —p. 1228
Therapeutic Experiments with Cobra Toxin in Dermatology and Metasyphilis S. Brimbliss —p. 1233
Moist Bandage Schlafli —p. 1234

Venous Pulse—Merkelbach points out that whereas three decades ago the registration of the venous pulse was frequently resorted to, it is only rarely done today because the electrocardiographic method has largely superseded it. Nevertheless the author maintains that registration of the venous pulse has still diagnostic significance in that it reveals the circulatory conditions in the right side of the heart and also the venous outflow from the large circulation. He describes the technique

of registration of the venous pulse and the normal venous pulse curve, and the time relation between venous pulse, cardiac sounds and electrocardiogram, then the venous pulse in valvular lesions, and reproduces various curves of the venous pulse of patients with mitral insufficiency, tricuspid insufficiency and absolute arrhythmia, or nonsyphilitic aortic insufficiency. He admits that in the diagnosis of rhythmic disturbances of the heart registration of the venous pulse has long been superseded by electrocardiography, but he points out that, as Wenckebach and Winterberg have shown, registration of the venous pulse is of great value in early blocked auricular extrasystoles. In such cases the venous pulse curve clearly shows an A wave, whereas in the electrocardiogram the P wave does not have to be indicated, and under these conditions it is of course impossible for a deformity of the T wave of the preceding ventricular complex to become manifest in the electrocardiogram.

Anales de Medicina Interna, Madrid

4 1003 1104 (Nov.) 1935

- *Postemotional Melanotic Pigmentation C. Bonorino Urdondo and G. P. Goñalons —p. 1003
Glycemia in Acute Pneumopathies P. A. Buyla and M. Diaz Ties —p. 1011
Experimental Serous Inflammation M. S. Jimenez —p. 1019
Heart in Acute Glomerulonephritis J. Alsina Bofill —p. 1035
*Cholesterolemia and Arterial Hypertension F. Domenech and A. Lafuente —p. 1049
Edemonephrotic and Eclamptic Syndrome Without Convulsions Case G. Riesgo del Campo —p. 1067

Postemotional Melanotic Pigmentation—Bonorino Urdondo and Goñalons say that melanoderma is a constant symptom of adrenal insufficiency caused by emotion. A few small pigmented patches, of a light brown at first, appear only on the face and then increase in number and size, intensify in color and cover new areas of the skin as the disease progresses. In rare cases the condition is complicated by a syndrome of hyperpressure, epistaxis, headache, dizziness and obnubilation or by the appearance of dull iridescent white patches of pigmentation during the early hours of the morning. The white pigmentation is caused by a reflex originating in the expansion, contraction and superposition of the chromatophore cells of the skin and the dermis. Its spontaneous appearance can be produced by subjecting the patient to sudden emotion, such as that caused by an unexpected noise like an explosion. Postemotional melanotic pigmentation is caused by an insufficiency of the adrenal cortex, proved by the fact that the administration of cortical extract for a prolonged period of time (one year and a half in the two cases reported by the authors) results in recovery. Discontinuance of the treatment before complete recovery causes an aggravation of the adrenal disturbance manifested by the reintensification of the pigmentation and of the general symptoms.

Cholesterolemia and Arterial Hyperpressure—Domenech and Lafuente discuss the relation between the disturbances of the cholesterol metabolism and the etiopathogenesis of arterial hyperpressure. On reviewing the literature one observes first that the results reported regarding experimental production of hyperpressure by administering diets containing substances rich in cholesterol to herbivorous animals are not applicable to the development of arterial hyperpressure in hypercholesterolemia in man because the cholesterol metabolism of human beings is entirely different from that of the lower animals; secondly that the figures given by several workers as representative of the frequency and intensity of hypercholesterolemia in hypertensive patients are conflicting, and, thirdly, that there is no reason on which the criterion of the origin of hyperpressure due to a direct action of cholesterol can be based. The authors made determinations of the cholesterol in the blood of fifty-two patients between 25 and 75 years of age suffering from hyperpressure. In 65 per cent of the group (thirty-four cases) hypercholesterolemia was present, but its intensity was not related to that of hyperpressure, and they were all suffering coincidentally from some other pathologic condition that seemed to be responsible for the presence of hypercholesterolemia. The pathologic conditions in the patients were a hypercortico adrenal syndrome in six cases, hirsutism in one, diabetes in six, hyperthyroidism in two, climacteric hyperpressure in thirteen, syphilis in twelve, cardiac insufficiency in ten and

pulmonary tuberculosis in two. The authors conclude that there is no etiological relation between hypercholesterolemia and arterial hyperpressure.

Arch Urug de Med, Cir y Especialid, Montevideo

7 497 624 (Nov.) 1935 Partial Index.

Congenital Stenosis of Aortic Orifice. Possible Repercussion of Tensional Values on Ventricular Hypertrophy and on Electrocardiogram. A. Alvarez Moulia and C. de Pro.—p. 499

Critical Study of Oleochrysotherapy. F. D. Gomez and J. C. Negro.—p. 513

*Simultaneous Gold and Arsenical Treatment in Tuberculosis Complicating Syphilis. F. D. Gomez and A. R. Gines.—p. 517

Treatment of Cancer of Uterine Neck. L. P. Bottaro.—p. 521

The Middle Lobe of the Lung in Children. Clinical and Roentgenologic Study. A. Carraro and H. Bazzano.—p. 569

Trapezium Shadows of Cardiac Roentgen Image. E. Anaya and N. Cabañero.—p. 573

Tuberculosis Complicating Syphilis—Gomez and Gines made Wassermann tests of the blood serums of 1013 women suffering from various diseases with positive results in 110 cases. The sputum of eighty-nine patients in this group contained tubercle bacilli, twenty-four of whom suffering from fibrocaceous pulmonary tuberculosis were given a combined treatment of intravenous injections of nearsphenamine (in increasing doses of from 0.15 to 0.6 Gm. per injection once a week) and of double gold and sodium thiosulfate (in doses of 0.5 Gm. per injection twice a week). The total amount of nearsphenamine administered during the treatment varied between 6 and 10 Gm. The arsphenamine and gold injections were made on different days and were well tolerated even by patients suffering from pulmonary tuberculosis complicated by laryngeal or intestinal tuberculosis. Hemoptysis did not follow the treatment. A severe hemorrhage was controlled in one case a few hours after the administration of an intravenous injection of nearsphenamine. The treatment seemed to develop renal complications, which made their appearance in six patients of the group of twenty-four thus treated. Syphilis, as interpreted by the symptoms and by the results of the serologic reactions and pulmonary tuberculosis followed an independent and sometimes opposite evolution. The pleuropulmonary disease of patients in whom the examination of the sputum failed to show tubercle bacilli was considered of tuberculous rather than syphilitic origin because of the aspect and seat of the pulmonary lesions and of the history of the patient.

Archiv fur Gynakologie, Berlin

160 1 222 (Nov. 29) 1935 Partial Index

Studies on Cholesterol Metabolism in the New Born. Contribution to Problem of Icterus Neonatorum. O. Muhlbock.—p. 1

Hematoencephalic Barrier in Inflammatory Disturbances of Female Genitalia. H. Hoffmann.—p. 62

Chorioepithelioma and Hydatid Mole, from Point of View of Quantitative Hormone Determination. J. Ruzicka.—p. 76

*Treatment of Trichomonas Vulvovaginitis by Means of Silver Salt Solutions in Ammonia. E. Werbatius and L. S. Kritschewski.—p. 97

Limits of Obstetrics in the Home in Disturbances of After Birth Period. C. Holtermann.—p. 101

Treatment of Eclampsia with Solution of Magnesium Sulfate. D. P. Brownkin.—p. 141

Cholesterol Metabolism in the New-Born—Muhlbock found that the cholesterol content of the blood and serum of the umbilical cord is unusually low in comparison with that of the maternal blood. The esterification ratio in the umbilical serum is the same as in the maternal serum. The percentage of free cholesterol in the blood of the umbilical cord is greater than that in the maternal blood. This is explained by the larger number of erythrocytes that contain only free cholesterol. In the new born there is a considerable increase in the cholesterol content during the first few days of life. It begins a few hours after birth and reaches its maximum on the second or third day of life. In the blood as well as in the serum this increase is almost entirely the result of an increase in free cholesterol. The author discusses the various causes of the increase during the first few days of life but reaches no satisfactory explanation. In infants with icterus neonatorum and without it he found no difference in the height of the cholesterol values or in the esterification ratio. In this connection he discusses icteric conditions in adults and shows that icterus neonatorum cannot be caused by biliary stasis (as had been assumed by some) but must be the result of hematogenic factors.

Treatment of Trichomonas Vulvovaginitis—Werbatus and Kritschewski point out that the therapeutic effect of silver solutions is largely dependent on their degree of dissociation. They cite Jermolajew's studies, which disclosed that the presence of ammonia is important for the action of silver salts. In preparing the so-called ammonia silver salts, silver nitrate serves as the basic substance. It is first transformed into some form of silver salt, such as silver chloride ($\text{AgNO}_3 + \text{NaCl} = \text{AgCl} + \text{NaNO}_3$). This salt is then dissolved in ammonia ($\text{AgCl} + [\text{NH}_3]_n + \text{H}_2\text{O}$). In the solution thus obtained, the silver plays the part of the more active ions (cations) and the chlorine the part of the less active ions (anions). The authors used the freshly prepared solution for the treatment of women with trichomonas vulvovaginitis. The treatment consisted of three phases: (1) the vagina was irrigated with 1 liter of a 1:20,000 solution of ammonia silver salt, (2) enemas of 100 cc. were given with a 1:40,000 solution of the same preparation without previous evacuation of the bowel, (3) a cotton tampon saturated with the 1:20,000 solution was left in the posterior vaginal vault for from twelve to eighteen hours. This procedure was repeated daily for about two weeks. Every fifth day the vagina was examined for the degree of purity and the presence of *Trichomonas vaginalis*. The authors obtained good results with this method.

Beitrage zur klinischen Chirurgie, Berlin

162 513 672 (Dec. 4) 1935 Partial Index

*Role of Brown Pearce Tumor of Rabbit in Experimental Studies on Neoplasms. K. H. Bauer and K. Deckner.—p. 513

Roentgen Irradiation in Treatment of Prostatic Hypertrophy. P. Blumel.—p. 545

Cholecystography of Gallbladder Stasis. R. Schrader.—p. 578

Value of Roentgenologic Investigation of Postoperative Biliary Fistula. E. Mester (Kaufman).—p. 635

*Calcium Metabolism and Surgery of Parathyroids. F. Mandl.—p. 643

Rôle of the Brown-Pearce Tumor in Experimental Studies—Bauer and Deckner studied the biologic and pathologic characteristics of the Brown Pearce tumor in 200 rabbits. They conclude that this neoplasm is a primary carcinoma of the skin in which the malignant condition is much greater than that of most growths found in man. The fact that it can be readily transplanted and that it gives rise to early and widespread metastases makes it particularly valuable for purposes of experimental study. Remuculation is accomplished by removing tissue from a metastatic growth under aseptic precautions, making an emulsion of it in physiologic solution of sodium chloride and injecting it into the testicle or into a vein. Inoculation into the brain the anterior chamber of the eye and under the skin was found less advantageous. The histologic structure of the tumor is that of an immature skin carcinoma, the cells of which possess no definite arrangement because of the almost total absence of stroma. The tumor metastasizes early and with great rapidity. The stormy growth of its cells is, however, accompanied everywhere by necrosis. The metastases spread by the lymphogenous and the hematogenous routes. The authors studied the questions of the preservation of individual characteristics on the part of the cancer cells of the increase in the malignant condition and of predisposition or resistance to the tumor. They found that the tumor cells retained their original characteristics after fifteen years and many remuculations. They may in a sense be considered potentially immortal provided remuculations into new organisms are kept up. The virulence has increased with time. Nearly all types of rabbits proved susceptible, although resistant types were occasionally encountered. The influence of individual differences and of external conditions such as season or light played a subordinate part in the question of immunity to the tumor. In the opinion of the authors the tumor offers great possibilities for investigation of the value of roentgen therapy, the hereditary biologic characters of cancer and the question of inheritance of predisposition to cancer as well as of the possibilities of chemotherapy.

Calcium Metabolism and Surgery of Parathyroids—Mandl states that generalized fibrous osteodystrophy or Recklinghausen's disease of bones constitutes a definite disease that can be diagnosed correctly in most instances. In the majority of such cases an enlargement of the parathyroids is found when operation is performed. Complete restoration to normal follows

the removal of the parathyroids. In a small number of cases with a clearly established diagnosis, a parathyroid tumor was not found at the time of operation. It is assumed that in such cases there may exist an enlarged but misplaced and therefore inaccessible parathyroid body. The removal of a normal parathyroid, however, leads even in these cases to a cure or at least to an improvement. Cases have been reported in which the removal of normal parathyroid tissue, in the absence of a parathyroid tumor, failed to cure the existing generalized bony dystrophy. A theoretical explanation of such cases is the possibility of some other endocrine influence on calcium metabolism than that of the parathyroids, or the more simple possibility of the existence somewhere in the body of misplaced hyperfunctioning parathyroid tissue. The fact that improvement has taken place following the removal of normal parathyroids in cases of ankylosing arthritis or in scleroderma, conditions in which the calcium metabolism is not disturbed, suggests that the parathyroids may have other functions besides that of regulating the calcium metabolism. Decalcination by means of parathyroid extract is worthy of trial in cases of hypercalcemia with bony changes, though its effects are not as striking or lasting as those of parathyroidectomy. Localized fibrous osteitis and Paget's osteitis deformans are not in any way related to Recklinghausen's disease of the bones. It is, however, probable that Paget's disease is related in some way to the parathyroids.

Deutsche medizinische Wochenschrift, Leipzig

61 1999 2038 (Dec. 13) 1935 Partial Index

- Disturbances After Cerebral Operations and Their Treatment W. Tonnies—p. 1999
- Disturbances After Gynecologic Operations and Their Treatment E. Holzbach—p. 2000
- Disturbances After Pulmonary Operations and Their Treatment H. Ulrici—p. 2002
- *Differentiation of Benign and Malignant Hemorrhages of Gastrointestinal Tract I. Bors—p. 2003
- *Trichotillomania C. L. Karrenberg—p. 2006

Hemorrhages in Gastro-Intestinal Tract—Boas shows that the methods formerly employed for the demonstration of blood in the feces can no longer be considered adequate. In addition to the demonstration of hemin, it is necessary, particularly in the case of a strongly positive peroxidase reaction to search also for occult hemoglobin and its derivatives. The first demonstration of hemoglobin does not make possible a differentiation of malignant and benign hemorrhages of the gastro-intestinal tract. Serial examinations are more valuable if they reveal a gradual subsidence of the hemoglobin. A hemorrhage of benign origin is likely, whereas the continuous admixture of hemoglobin makes a malignant hemorrhage probable. However the behavior of the stercoporphyrins is even more important. In the case of benign hemorrhages the porphyrin content of the feces particularly their content in deuteroporphyrin and protoporphyrin is usually low, whereas in malignant hemorrhages it is usually considerably increased, irrespective of the amount of hemin products. For the approximate quantitative determination of the stercoporphyrins the author found helpful the use of a method that he designates as "shake out number." He also stresses that the heretofore neglected spectroscopic and spectrochemical methods should be used more widely.

Trichotillomania—Karrenberg describes the case of a boy, aged 12, with a peculiar type of loss of hair. The younger sister of the boy also had a peculiar type of alopecia. The skin seemed normal, there was no itching and the shape of the hairless area indicated an artefact. The children were carefully watched and it was found that the boy pulled out his own hair as well as that of his sister. The hair was cut short and the boy was admonished to discontinue the practice. The hair grew again. In this connection the author calls attention to Hallopeau's report on trichotillomania, in which the disorder was considered a disease entity in which extreme pruritus is the primary symptom. Later reports by several other investigators indicated, however, that trichotillomania is not so much a disease entity as a symptom that becomes manifest in various disorders, such as idiocy, dementia, hysteria, neuropathy, chronic alcoholism, compulsion neuroses, sexual neuroses and psychic depressions. The disorder has been

observed also in persons without mental disturbances. The author relates a case in which trichotillomania concurred with syphilitic alopecia areata. The author points out that in cases in which a mental disorder is the underlying cause, psychiatric treatment will be necessary.

Klinische Wochenschrift, Berlin

14 1737 1776 (Dec. 7) 1935 Partial Index

- *Investigations on Causes of Sodium Chloride Requirements H. Glatzel—p. 1741
- Clinical Aspects and Pathogenesis of Niemann Pick Disease T. Baumann—p. 1743
- Influence of Hypophyseal Extracts on Blood Fat and Ketone Bodies of Persons with Obesity G. Borruo—p. 1746
- Studies on Hydrogen Ion Concentration in Duodenal Juice Dienst and Doering—p. 1748
- *Change in Action of Ovarian Hormone and of Gonadotropic Portion of Anterior Lobe of Hypophysis by Disturbance in Acid Base Equilibrium K. A. Bock—p. 1750

Causes of Sodium Chloride Requirements—Glatzel admits that it is necessary to restrict the intake of sodium chloride in some disturbances, but points out that it has medicinal value in other conditions. His studies are concerned with the sodium chloride requirements of healthy persons. First he reports observations that refute Bunge's theory, according to which sodium chloride consumption is known only among peoples who subsist mostly on vegetable foods, that is, on foods with a high potassium content. The author found that a diet with high potassium content does not lead to loss of sodium and concludes that Bunge's theory does not explain the sodium chloride requirements. Since a number of ethnologic, historical, physiologic and clinical observations indicate connections between the sodium chloride and the carbohydrate metabolism, he decided to investigate this problem, particularly the cleavage of the polysaccharides by the salivary amylase. On the basis of the results he obtained with several test methods, he concludes that the diastatic cleavage of the polysaccharides is greatly promoted by sodium chloride. He found that sodium chloride accelerates the action of the diastase as such and that it causes the secretion of a saliva that has a stronger fermentative action. He points out that quite similar conditions have been found in the pancreatic and the hepatic diastase.

Action of Hormones in Disturbances of Acid-Base Equilibrium—Bock shows that the excretory glands are not only related among themselves but also influenced by factors such as the sympathetic nervous system, the acid base economy and the electrolyte constellation. He investigated the dependence of the action of the ovarian hormone on the hydrogen ion concentration of the animal organism. For these studies he used mature castrated white mice. He observed that estrus could be elicited with 0.8 mouse unit in castrated mice that had received an acid diet, whereas in case of an alkaline diet signs of estrus did not even appear following the administration of 14 mouse units. In studies on the dependence of the action of the gonadotropic hormone of the anterior lobe of the hypophysis on the hydrogen ion concentration of the animal organism, the author used infantile female mice. Here again he obtained unequivocal results. Animals that had received an acid diet showed spots of blood in their ovaries when only 0.6 mouse unit of gonadotropic substance had been given, animals receiving an ordinary diet showed this reaction in response to 1 unit and animals on an alkaline diet showed the spots when 1.2 units were given, and, in order to elicit estrus, it was necessary to give still larger doses. The author thinks that these observations may prove useful in the endocrine therapy of human subjects.

14 1777 1808 (Dec. 14) 1935 Partial Index

- Tyrosine and Thyroxine I. Abelin—p. 1777
- Electrocardiogram in Severe Hypoglycemic Shock A. de Chatel and C. Palisa—p. 1784
- Appearance of Formic Acid in Urine in Course of Apple Diet K. Voit and H. Friedrich—p. 1792
- *Vitamin C Requirements During Pregnancy and Lactation W. Neuweiler—p. 1793

Vitamin C Requirements During Pregnancy—Neuweiler describes elimination tests on nonpregnant pregnant and lactating women, which he conducted in order to determine the vitamin C requirements during pregnancy and lactation. The

tests revealed that the vitamin C consumption is greater in pregnant than in nonpregnant women and that the vitamin C requirements are even greater during lactation than during pregnancy. He concludes that the danger of C hypovitaminosis is especially great during pregnancy and lactation and that because of this it is important that pregnant and lactating women receive an adequate supply of vitamin C. If the diet does not provide sufficient amounts of the vitamin in the natural form (from fruits and so on), the vitamin C may be given in the form of a vitamin C preparation.

Medizinische Klinik, Berlin

31 1625 1656 (Dec 13) 1935 Partial Index

Morphologic Reactions of Organism in Response to Infectious Agents
F. Buchner —p 1625

Hypnotics and Sedatives in Circulatory Disorders R. Weiss —p 1628

Occurrence and Causes of Erythrocytosis H. Otto —p 1635

Climatic and Dietetic Treatment of Exophthalmic Goiter E. Szisz
—p 1638

*Pathogenic Significance of Pituitary Basophilism Particularly for
Eclampsia F. J. Kraus —p 1641

*Typical Sport Injury of Ankle Joint in Football Players A. Lerch
—p 1643

Significance of Pituitary Basophilism —Kraus calls attention to studies indicating that pituitary changes particularly pituitary basophilism play a part in the pathogenesis of nephropathy and eclampsia of pregnant women. He also cites studies disclosing that an increase in the basophilic cells of the hypophysis is observable not only in chronic nephritis and in various forms of contracted kidney but also in normorenal patients with dementia paralytica, so-called constitutional obesity, syphilitic mesaortitis, chronic alcoholism or essential hypertension, and even under normal conditions in persons of the athletic type, particularly in those whose weight is somewhat excessive. The fact that the majority of the aforementioned disturbances are found chiefly in persons with a hypersthenic habit indicates that constitutional factors play a part in the increase in the basophil cells of the hypophysis. Moreover, the author found that pituitary changes are frequently accompanied by adrenal changes and that there is a relation to conditions of the blood pressure and to the fat and cholesterol metabolisms. However, although admitting a relationship between pituitary basophilism and such disturbances, he doubts the pathogenic significance of pituitary basophilism. He cites factors that contradict the pituitary genesis of eclampsia and of hypertension and shows that the pituitary basophilism observed in the various disturbances that are accompanied by hypertension as well as in constitutional obesity is only an occasional result but not the cause of these disturbances. With regard to the invasion of basophil cells into the posterior lobe of the hypophysis in cases of eclampsia, he says that there is not necessarily a direct connection between the two even as the manifestation of a compensatory process. He thinks that the increased invasion of basophils is due to the fact that the majority of women with eclampsia are obese (73 per cent according to one report) and that obesity is accompanied by pituitary basophilism in about 80 per cent of the cases. Moreover, since in many cases of eclampsia parenchymatous nephritis and contracted kidney had existed before the increased number of basophil cells could also be related to the renal disorder without having a causal connection with eclampsia.

Injury of Ankle Joint in Football Players —Lerch reports that he has observed cartilage bodies in the ankle joint of three young men who were football players. The first of the cases is described in detail because it illustrates the pathogenesis of the free joint bodies. The process begins with changes in the articular cartilage indicated by an indefinite outline and by excrescences and then the degenerated cartilage becomes gradually detached until finally there is a freely movable body. In this case as well as in the two other cases the bodies were removed by a surgical intervention so as to avoid incarceration in the ankle joint. In the course of examinations of other football players the author observed twelve others with changes at the osseocartilaginous boundary of the talus. These men, however, made no complaints, and therapeutic intervention was therefore dispensed with.

Monatsschrift für Kinderheilkunde, Berlin

64 81 240 (Dec 2) 1935 Partial Index

*Studies on Cardiac Changes in Children with Goiter A. Viethen —p 81

*Static Infantilism E. Flusser —p 88

Complications of Mumps in Children W. Mikulowski —p 101

Action of Mustard Plaster on Skin Y. Hiro and M. Yamada —p 109

Lymphogranulomatosis of Lung During Childhood H. G. Huber —p 126

*Causes of Infant Mortality O. Savi —p 136

Cardiac Changes in Children with Goiter —Viethen says that Feer's observations of cardiac enlargement in new-born infants and nurslings with goiter was not corroborated by all investigators. Since this problem is of considerable clinical interest, the author made clinical and roentgenologic studies on its incidence and development in 177 children with goiter: twenty-three new-born, eighteen nurslings, fifty-five up to the age of 10 years and eighty-one between 10 and 15 years. He observed cardiac enlargements in the new-born and in nurslings, but the incidence was not quite as high as reported by others. Pathologic anatomic studies revealed a larger weight of the heart in the new-born with goiter than in those without goiter. This corroborated the roentgenologically observed enlargements of the heart. In children of school age, the cardiac enlargements are no longer as frequent as in young children. However, roentgenoscopy disclosed important changes in the shape of the cardiac shadow in about 25 per cent. Electrocardiographic studies on new-born infants, nurslings and older children with goiter gave no definite indications of toxic impairment of the heart. The author concludes from this that in these children the cardiac changes are a result of mechanical pressure of the goiter on the cervical organs.

Static Infantilism —Flusser says that the term static infantilism was first used by Thomas for that condition of the static capacities in older nurslings or in small children which is observed in cerebral diplegia (Little's disease). It becomes manifest in an increased tension of the muscles of the extremities and a relaxation of the muscles of the trunk and neck. This behavior of the musculature, dysmyotonia, is a physiologic condition during the first few months of life but should have disappeared at the end of the first half year of life. If it persists longer, Little's disease must be thought of, but, if this disorder can be excluded, an abnormal behavior of the musculature is frequently interpreted as rachitic myopathia. However, the author emphasizes that rickets is characterized by a lax hypotonic musculature of the extremities and that an increased tonicity cannot be ascribed to rickets. Moreover, simultaneously existing rickets of the bones does not justify the interpretation of changes in the musculature as rachitic. The main part of the author's report is concerned not with static disturbances that are the result of rickets or of abnormal conditions of the central nervous system but rather with a form of static infantilism characterized (1) by persistence beyond the normal period of the tonicity of the muscles and of the static capacities that exist during the first few weeks of life, (2) by abnormal smallness of the external genitalia, and (3) by insufficient longitudinal growth. Another symptom that is rather frequent in these children is cracking in the joints in case of voluntary, active movements. After pointing out that he has observed seven such cases within the last twelve years, he gives a more detailed discussion of the symptoms and reports observations he made in some of his cases. He is convinced that the concurrence of the three symptoms, dysmyotonia (with or without articular noises), microgenitalism and retardation in the longitudinal growth is not accidental but is of a constitutional nature. He hopes that his report of as yet incomplete observations will stimulate observations on a larger clinical material.

Causes of Infant Mortality —Savi summarizes his investigations as follows: 1. Up to 1925 the infant mortality in Prague showed a constant decline, but after that it increased again and reached a new peak in 1931, which from 1932 to 1934 was followed again by a declining tendency. The curve indicating stillbirths showed a similar behavior. 2. The mortality of nurslings and of the new-born and the number of stillbirths show a dependence on social factors. 3. The number of stillbirths increases with the size of the city, except that in cities of more than 100,000 inhabitants the percentage shows

again a slight reduction. 4 The chief causes of stillbirths and early deaths are, in the order of their importance, debility, asphyxia, birth trauma, syphilis and obstetric operations.

Munchener medizinische Wochenschrift, Munich

82 1981 2020 (Dec. 13) 1935 Partial Index

Present Status of Research on Heredity in Gastric or Duodenal Ulcer E. A. Witteler—p. 1981

Asthma, Allergy and Psychophysical Constitution A. Hanse—p. 1985

*Scarlet Fever Conjunctivitis H. Otto—p. 1987

Albuminuria of Psychic Origin G. Buchner—p. 1988

Scarlet Fever Conjunctivitis—Otto points out that the majority of infectious diseases are accompanied by conjunctivitis but that it is frequently asserted that conjunctivitis does not occur in scarlet fever. Moreover, the presence of conjunctivitis is by some interpreted as a sign that the existing disorder is not scarlet fever. The author's observations, however, indicate that conjunctivitis is not as rare in scarlet fever as has been asserted. Of 891 scarlet fever patients who were treated at his clinic, fifty-two had a conjunctivitis (almost 6 per cent). After mentioning the various morphologic types of scarlet fever conjunctivitis, he says that the time of onset and the duration of the conjunctivitis differ considerably. There is an early and a late form. The early form develops within the first six days, frequently together with the exanthem, and persists from two to sixteen days. The late type begins between the fifteenth and fiftieth days and lasts for from eight to twenty-five days. In the author's material the early form was the most frequent. He reviews and evaluates various theories of the etiology of the conjunctivitis of scarlet fever and points out that these theories disregard the eosinophilia in the blood which to him is a sign of an allergic condition. He considers the conjunctivitis a manifestation of an allergic reaction.

82 2021 2062 (Dec. 20) 1935 Partial Index

Narrow Pelvis and General Practitioner E. Puppel—p. 2021

*Blood Transfusion in Treatment of Internal Diseases K. Blumberger—p. 2023

*Suppurating Meningitis in Course of Scarlet Fever H. Zischinsky—p. 2023

Prevention of Infection in Hospital H. J. Keller—p. 2031

Specific Action of Short Waves E. Hasche and T. Triantaphyllides—p. 2037

Influence of Vitamin Deficiency of Food in Surgical Interventions in South China K. Boshamer—p. 2045

Blood Transfusion and Internal Diseases—Blumberger has obtained satisfactory results with the citrate method. He recommends it in severe cases of pernicious anemia. For aplastic forms of anemia, blood transfusion has likewise been recommended but opinion differs about its efficacy in these disorders. He says that the leukemias are not influenced by blood transfusion but that the secondary anemias that may accompany leukemia are favorably influenced. He does not consider blood transfusion a reliable method for the treatment of agranulocytosis but admits that favorable results have been reported. In thrombopenic conditions blood transfusion has likewise been known to produce good effects. Moreover blood transfusion has proved valuable as a blood substitute and for hemostatic purposes. In this connection the author mentions severe gastric and intestinal hemorrhages, severe loss of blood in hemophilic patients and parenchymatous hemorrhages. He shows that in early carcinomatous hemorrhages blood transfusion may eventually restore the patients to such an extent that surgical treatment can be resorted to. He estimates the value of blood transfusion in various infectious diseases. His own observations were made only on patients with sepsis and with infectious granuloma (Hodgkin) and his results were not greatly encouraging. Other infectious diseases in which blood transfusion has been known to produce favorable results are scarlet fever, measles, chickenpox, diphtheria and typhoid. In these cases it is usually the object to transmit the blood of persons who have had the corresponding infectious disease in the hope that the antitoxin content of the donor's blood will be effective. However the author stresses that other treatments, particularly serums, are usually available in these disorders. He does not entirely reject the use of blood transfusions for these conditions but thinks that it should be used sparingly so as not to bring the method into discredit through misuse.

Suppurating Meningitis and Scarlet Fever—Zischinsky gives the histories of three cases of suppurating meningitis in scarlet fever and shows that all were of the primary (metastatic) type. One of the patients recovered. As regards the pathogenesis of suppurating meningitis in scarlet fever, two types can be differentiated, the primary or metastatic type and the type that develops by direct conduction, in which case the ear plays the most important part, the accessory sinuses being of much less importance. He points out that in discussions with otologists the question is often raised as to whether there is really a metastatic meningitis in infectious diseases, many of them being of the opinion that the pathogenesis is usually otogenic. To this he replies that every experienced pediatrician will admit that there is a metastatic form. As far as the author's own observations are concerned, he thinks that the metastatic form is even the more frequent. He admits that this greater frequency is more evident in whooping cough than in scarlet fever, since suppurating meningitis is comparatively rare in the latter condition.

Wiener klinische Wochenschrift, Vienna

48 1503 1534 (Dec. 6) 1935 Partial Index

Prognosis of Diabetes Mellitus During Childhood R. Priesel—p. 1503

Pathology of Biliary Secretion K. Glaessner—p. 1506

*Insulin in Treatment of Menorrhagia and Metrorrhagia E. Klaffen—p. 1509

Cardiovascular Syphilis A. Wydin—p. 1515

*Successful Use of Diiodotyrosine in Some Internal Disorders A. Edelmänn—p. 1518

Insulin in Treatment of Menstrual Disturbances—Klaffen points out that a number of investigators have tried insulin in the treatment of menstrual disturbances and that he has resorted to their prophylactic treatment with insulin. He found that this treatment normalized the flow in some cases of profuse menstrual bleedings and particularly in prolonged bleeding. He considers it especially important that the treatment was helpful in cases of polymenorrhea. It proved possible to prolong the interval from fourteen to twenty, twenty-four and finally twenty-eight days. The interval was normalized and the period of bleeding was shortened in twelve out of fifteen patients with polymenorrhea and hypermenorrhea, but the intensity of the hemorrhage was influenced only in half the number. In twelve cases of juvenile hemorrhagic metropathy the results were likewise favorable, but in preclimacteric hemorrhagic metropathy the effect was not so good, in that only some of the patients responded. The latter were usually women who had undergone surgical treatment for gastrointestinal ulcer or for cholelithiasis. All had lost weight and this emaciation was accompanied by menstrual disturbances, that is these cases were characterized by secondary, insulogenic menstrual anomalies. Another group of women in whom polymenorrhea and hypermenorrhea were favorably influenced by insulin therapy were those who had a hereditary history of diabetes or those who later developed diabetes. Women of the preclimacteric period with hemorrhagic metropathy who did not have the aforementioned symptoms (emaciation, metabolic disturbances, cholecystopathy and so on) did not respond so well to insulin treatment. The insulin dosage was adapted to the body weight, the age and the blood sugar value. Generally the daily dose varied between 15 and 30 units but in some instances as much as 40 or 50 units was given. The injections were begun five days before the expected menstruation and were continued for four or five days. The author points out that he found insulin effective also in two women with emaciation, anorexia and amenorrhea. He shows that the mechanism of the insulin action is extremely complicated. He mentions the metabolic component, the regenerative effect, the influence on the sympathetic nervous system and on the process of follicle maturation and the formation of the corpus luteum. An influence on the anterior lobe of the hypophysis is likewise possible.

Diiodotyrosine in Internal Disorders—Edelmänn points out that, although iodine medication was known to be effective in many disorders, its use was avoided because of the danger of exophthalmic goiter. Since diiodotyrosine is as effective as inorganic iodine but does not involve the same danger of harmful effects, the author decided to use it in conditions in which

iodine therapy promised favorable results. On the basis of his observations he considers the use of diiodotyrosine indicated in so called rheumatic disturbances that are caused by metabolic disorders, particularly uric acid diathesis, in the rheumatic disturbances that are caused by endocrine disorders in allergic conditions, particularly bronchial asthma and vasomotor rhinitis, in tachycardias of thyrotoxic climacteric or of unknown pathogenesis, in some cases of diabetes, in goiter, and preparatory to thyroidectomy.

Zeitschrift für klinische Medizin, Berlin

129 1136 (Nov. 18) 1935 Partial Index

- *Involvement of Hypophysis in Pathogenesis of Human Diabetes Mellitus K. J. Anselmino and F. Hoffmann—p. 24
- *Rhythmic Activity of Human Liver A. Jores—p. 62
- Day Night Rhythm of Diabetes Mellitus R. Hopmann and H. Martini—p. 70
- Hepatic Function in Thyrotoxicosis C. A. A. Schrumpf—p. 95
- *Observations on Morbus Cereuleus U. Steinberg and B. Wiesner—p. 100
- *Quantitative Determination of Porphyrin in Urine as Aid in Early Recognition of Lead Poisoning K. Franke and S. Litzner—p. 115
- *Lead Poisoning and Porphyrin E. Roth—p. 123

The Hypophysis and Diabetes Mellitus—The survey of Anselmino and Hoffmann on the present knowledge of the modification of the carbohydrate metabolism by the anterior lobe of the hypophysis reveals that this lobe acts on the carbohydrate metabolism by means of a number of hormones. Since it has been possible to produce artificial diabetes in animals by the administration of various anterior pituitary extracts and since numerous clinical observations indicate a hypophyseal involvement in human diabetes mellitus, the authors have tried to demonstrate a disturbance of the hypophyseal regulatory mechanism in patients with diabetes mellitus. They detected a pathologically increased elimination of the anterior pituitary hormones of the fat and carbohydrate metabolisms in the urine of such patients and also the presence of an increased amount of these hormones in the blood while the patients were fasting. From these observations the authors conclude that the hypophyseal regulatory mechanisms are severely disturbed. They discuss the metabolic action of these two hormones and show that their action corresponds to the most important clinical symptoms of diabetes mellitus. They reach the conclusion that a functional disturbance in the hypophysis plays an important part in the development of human diabetes mellitus, which, as regards its pathogenic significance, places the anterior lobe of the hypophysis directly beside the pancreas.

Rhythmic Function of Human Liver—Jores investigated the rhythmic function of the human liver by determining at four hour intervals, within the twenty-four hours of the day, the bilirubin content of the blood, the urobilinogen elimination and the pigmentation of the urine. In healthy persons who received a normal diet the curve indicating the bilirubin content of the blood had two maximal values at noon and at midnight. The minimal values were observed at 8 a. m. and 8 p. m. The urobilinogen elimination in the urine shows a maximum between noon and 4 p. m. and a minimum during the night and early morning hours. The urinary pigment shows a maximum from 4 to 12 a. m. and a minimum between 4 and 8 p. m. In order to determine whether this rhythm is influenced by the intake of food tests were made on patients with ulcer, who were fed by means of a duodenal tube. The patients were given the same amounts of a food mixture at two hour intervals in the course of the twenty-four hour period. It was found that this manner of food intake did not influence the rhythms. The same rhythms could be detected in patients with various types of jaundice. In view of the fact that the bile pigments originate in the blood pigments it seems possible that the described rhythms might be connected with a rhythmic blood destruction. The author investigated this problem by determining the resistance of the erythrocytes in the course of the twenty-four hour period, but he found no fluctuations and he concludes that the aforementioned rhythms are connected with a corresponding rhythmic activity of the liver. He points out that the rhythmic formation of the liver is important for diagnosis and therapy and for the twenty-four hour periodicity in general.

Congenital Heart Defects—Stenberg and Wiesner describe three cases of congenital cyanosis: one in a girl aged 19 and two in youths aged 20 and 19 respectively. Two of the patients died. The necropsies showed that the first patient had a stenosis of the pulmonary artery and a defect of the ventricular septum with displaced aorta. In the second patient there was a transposition of the large vessels, and the auricular septum was almost completely missing. The third patient had a defect of the auricular septum. The authors review the literature on the diagnosis of congenital cardiac defects. They show that the combination of several anomalies may make the diagnosis extremely difficult. They stress that the clinical aspects, percussion and auscultatory phenomena are the most important guides in the diagnosis.

Porphyrin in Urine and Lead Poisoning—Franke and Litzner emphasize that it is highly important to determine the porphyrin content of the urine for the early recognition of incipient lead poisoning. They show that in the absence of severe hepatic disturbances or of acute porphyria, daily porphyrin values of 500 micrograms (0.5 mg.) or a porphyrin content of 50 micrograms or more per hundred cubic centimeters indicate an impairment of the bone marrow by lead. They give a tabular report of the results of their tests on forty-two workers whose occupation exposed them to lead poisoning. They found that the normal porphyrin elimination in the urine is considerably higher in healthy lead workers than in other persons. They mention observations on three men (two brothers and a son of one) which indicated that there is a familial sensitivity to lead. It was observed also that the efficacy of the treatment of lead poisoning can be determined on the decrease in the porphyrin elimination. The authors recommended that workers who come in contact with lead should be subjected to porphyrin tests of the urine at regular intervals at least during the first two years of such work. In this manner it will be possible to determine whether they have a hypersensitivity to lead.

Lead Poisoning and Porphyrin—Roth reports a case of lead poisoning in which he investigated the relation between lead poisoning and the elimination of porphyrin. Every day he determined the quantity of urine, the elimination of porphyrin in the urine, the specific gravity of the urine, the erythrocyte values, the hemoglobin content, the reticulocytes and the resistance of the erythrocytes. The results of these studies are recorded in a table that also indicates the porphyrin content of blood and feces. The porphyrin elimination in the urine and in the feces was greatly increased. In the erythrocytes the protoporphyrin was greatly increased. There was no clear parallelism between the clinical symptoms and the porphyrin elimination. The symptoms decreased at a time when the porphyrin elimination was still rather high. The injection of liver extracts had no noticeable effect on the porphyrin elimination.

Zeitschrift für Tuberkulose, Leipzig

74 161 240 (Dec.) 1935

- *Influence of Tuberculin Desensitization on Tuberculosis Immunity H. Selter and P. Weiland—p. 161
- Simultaneous Occurrence of Pulmonary Abscess and Tuberculous Infiltration P. Zoelch—p. 170
- Short Wave Therapy in Sanatorium for Patients with Pulmonary Disorders T. Peters and W. Tegethoff—p. 178
- Statistics on Tuberculosis with Especial Consideration of Tuberculosis of Bone System W. Wegat—p. 188
- *Pathogenicity of Tubercle Bacilli of Mammals for Chickens B. Grünberg—p. 194
- Newer Medicaments and Nutritive Substances for Treatment of Tuberculosis G. Schröder—p. 196

Desensitization with Tuberculin and Immunity Against Tuberculosis—Selter and Weiland found that the desensitization of tuberculin-sensitive guinea pigs with increasing doses of tuberculin does not impair the immunity of these animals against fatal superinfections. This indicates that sensitivity to tuberculin and immunity to tuberculosis are two distinct manifestations of the tuberculous infection which are not mutually dependent and have no functional relations.

Pathogenicity of Tubercle Bacilli of Mammals for Chickens—Contradictory statements of other investigators about the pathogenicity of mammalian tubercle bacilli for chickens induced Grünberg to investigate this problem. He

always succeeded in infecting chickens with virulent tubercle bacilli of the avian type. Of eight animals thus infected, five died as the result of the infection and on necropsy showed severe pathologic changes. Three survived, and, when killed from six to nine months after the infection, they were found to be tuberculous, although they had never shown tuberculous symptoms. Of ten chickens that had been inoculated with tubercle bacilli of the human type, two died, but only one of them showed signs of tuberculous infection. All other animals of this group were killed after nine months and at that time proved free from tuberculosis. Of the twelve chickens that were inoculated with bovine tubercle bacilli, six were undernourished at the time of infection, while the others were well fed. The first six died, but only four showed tuberculous changes. Only one of the six well fed animals became infected. The others were found free from tuberculous changes when killed six months later.

Zentralblatt für Gynäkologie, Leipzig

59 2945 3008 (Dec 14) 1935

- Surgical Treatment in Complete Obliteration of Uterine Cavity L Nurnberger —p 2946
Webster Baldy Frankel Operation K Mull —p 2951
Vesicofixation of Uterus as Surgical Treatment of Retroflexion Descend and Prolapse L Kropp —p 2954
Pregnancy in Deformities of Uterus and Vagina A G Dobis —p 2958
New Apparatus for Direct Blood Transfusion Without Addition W Briem —p 2968
*Significance of Amenorrhea in Women with Pulmonary Tuberculosis F Gal —p 2973

Amenorrhea in Tuberculous Women —Gal describes studies showing that menstrual disturbances are comparatively frequent in pulmonary and in genital tuberculosis. However, he was unable to corroborate that the menstrual disturbance is more frequent in severe cases than is that the amenorrhea is caused by the tuberculous virus. He gained the impression that the amenorrhea is not caused by the tuberculous disorder but by the pathologic constitution that predisposes to tuberculosis. The severe forms of uterine and ovarian tuberculosis are of course different in this respect, in these cases the amenorrhea is caused by the destruction of the functioning tissues of the uterine mucosa and of the ovary. The author thinks that in the majority of tuberculous women with amenorrhea the menstrual disturbance requires no treatment. In the rare cases in which the amenorrhea is the cause of severe symptoms of abolished function, injections of endocrine products or quartz lamp irradiations are often beneficial.

Novyy Khirurgicheskiy Arkhiv, Dnepropetrovsk

34 459 600 (No 136) 1935 Partial Index

- Pseudarthroses G I Turner —p 463
*Clinical and Laboratory Evaluation of Cod Liver Oil Treatment of Wounds V I Iost and I G Kochergin —p 476
Diagnostic Errors and Their Causes N Soroko —p 492
Against Routine in Polemic and for Early Operation in Acute Appendicitis B B Reizman —p 527
Defense of Early Operation in Acute Appendicitis L M Ratner —p 531

Cod Liver Oil Treatment of Wounds —Iost and Kochergin report 263 cases in which cod liver oil treatment was used. Of these, twenty-eight were chronic ulcers, twenty-five burns or frost bites, nineteen severe trauma of the soft tissues of the extremities, ten open amputation stumps, 150 fresh superficial wounds and forty suppurating wounds. Cod liver oil was applied as a paste, made with 100 cc of cod liver oil, 100 Gm of petrolatum 15 cc of a preparation containing vitamins, and 10 cc of Japanese wax. In their experience a local application of cod liver oil was definitely beneficial in chronic ulceration, burns, frost bites and recent trauma of soft tissues. They believe the effect to be due to the abundant vitamin A and D content of the cod liver oil. Vitamin D possesses the property of stimulating the growth of granulations and of the epithelium. They consider it possible that there exists in the pathologic lesions or traumatized tissue a lack of vitamin due either to interrupted supply or to an increased demand for vitamins. The authors demonstrated in their bacteriologic studies that cod liver oil lowers the vitality of pus-producing bacteria. The application of cod liver oil to the wounds in the form of a

paste is more efficient because the oil is kept in contact with all parts of the wound. Keeping the lesion at rest is an important element in the treatment and is accomplished by fewer dressings or by immobilization in a plaster cast.

Ugeskrift for Læger, Copenhagen

97 1205 1232 (Nov 28) 1935

- Hypertrophy of Prostate E Thomsen —p 1205
Transurethral Resection of Prostate According to McCarthy H Abrahamson —p 1209
*Preoperative and Postoperative Treatment of Salt Deficiency Dehydration and Acidosis E Kirk —p 1212
Method for Bandaging Supracondylar Extension Fractures of Arm in Children L O Christensen —p 1216

Salt Deficiency, Dehydration and Acidosis —Kirk states that, whenever salt deficiency and dehydration are probable in surgical diseases, plasma chloride and plasma bicarbonate analyses are in order. Treatment consists in subcutaneous, intravenous or rectal administration of isotonic solution of sodium chloride (0.9 per cent). In grave cases from 3 to 5 liters is given daily 1 liter at each session, until the chloride values and the total salt content of the plasma become normal and a diuresis of from 1 to 2 liters daily is attained. The salt content in 1 liter of vomit being about the same as in 1 liter of plasma, none of the amount of vomited matter aids in the daily establishment of the necessary salt dosage. Overdosage is prevented by examination of the plasma chloride values. In acidosis of nondiabetic nature due to loss of alkaline secretion or retention of acids, intravenous injections of isotonic solution of sodium bicarbonate (1.3 per cent) are given. Symptoms of dehydration, mainly oliguria and increased blood urea, are often present. If the dehydration is partly due to chloride deficiency, supplementary administration of isotonic solution of sodium chloride is desirable. If the acidosis depends on inanition, a solution of dextrose also is indicated. The author warns against subcutaneous injections of the bicarbonate solution and against sterilization of the solution by heating and states that the solution must be used within four or five days after preparation. The amount of bicarbonate indicated in any case can be approximately determined by application of Palmer and Van Slyke's monogram. The effectivity of the treatment may be controlled at any time by determination of the bicarbonate content of the plasma. As a rule 1 liter of bicarbonate solution is given at each session in the course of about twenty minutes. If cardiac complications are suspected, great care must be exercised and intravenous injections of larger amounts of fluid omitted. Six cases are reported.

97 1233 1250 (Dec 5) 1935

- *Iron Therapy of Anemia with Control H C Gram —p 1233

Iron Therapy of Anemia with Control —Gram finds that iron in suitable form and dosage, probably 0.5 Gm of ferrous tartrate three times daily, is a far more effective remedy in most simple anemias than is generally supposed and one not to be neglected.

97 1275 1296 (Dec 19) 1935

- Multiple Manifestations of Surgical Tuberculosis E Thomsen —p 1275
Experiences with Omnadin in Infectious Diseases E Tryde —p 1278
*Agranulocytosis in Same Patient Under Different Conditions H A Olsen —p 1283
Epidemic Nausea? A Rischel —p 1285

Three Attacks of Agranulocytosis —Olsen has himself had three attacks of agranulocytosis: the first a typical case in 1928 after use of allylisopropylbarbituric acid and aminopyrine for about two weeks and the second a slight recurrence with characteristic blood changes being the earliest cases of agranulocytosis reported in Denmark. Blood examinations from 1928 to 1931 showed normal relations. After a relatively small dosage of double gold and sodium thiosulfate given in sanatorium treatment of a fairly recent tuberculous infection in both lungs in 1931 a highly febrile condition developed with pronounced symptoms of metal poisoning, and agranulocytosis was established. The double gold and sodium thiosulfate is regarded as the etiologic factor. These instances apparently show that a person may have a specific form of sensitivity to substances of different chemical composition and having reacted toward one substance with agranulocytosis, may react similarly toward other substances.

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PRIMARY CARCINOMA OF THE LUNG

A DIAGNOSTIC STUDY OF ONE HUNDRED AND
THIRTY-FIVE CASES IN FOUR YEARS

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Primary carcinoma of the lung is not a rare disease but constitutes about 6 to 8 per cent of all carcinomas.¹ In frequency it ranks next to malignant conditions of the gastro-intestinal tract. Twenty years ago only 5 per cent of the cases were diagnosed clinically, today about 50 per cent are recognized during life. After a ten year study of this subject we are convinced that at least 90 per cent of the cases can be diagnosed. The clinician who is familiar with the pathologic and clinical manifestations of primary lung carcinoma can recognize most cases from the history, physical examination and roentgen study. In some cases a bronchoscopic examination, injection of iodized oil or artificial pneumothorax will be necessary. The diagnosis can be confirmed by a biopsy of the frequently enlarged cervical or axillary lymph nodes, by microscopic examination of pleural exudates or pieces of tissue in the sputum, or by removal of a piece of tissue from a bronchus.

During a four year period we have studied 135 cases of primary carcinoma of the lung. Most of these patients were seen at the Cook County Hospital, the rest in private practice and in other hospitals. Seventy-four cases were confirmed by necropsy, twenty-six by biopsy and thirteen by bronchoscopy, and twenty-two were diagnosed from the characteristic clinical and roentgen manifestations. This study has indicated that cancer of the lung is one of the most important pulmonary diseases in people past 40 years of age. It must always be considered in dealing with cases of lung abscess, bronchiectasis, recurrent pneumonia, empyema, hemorrhagic pleurisy and chronic pneumonia. Pain in the chest or in other parts of the body, accompanied by a cough and bloody sputum and sooner or

later followed by dyspnea, is the cardinal symptom. An area of pulmonary infiltration or atelectasis, enlarged supraclavicular or axillary lymph nodes, a hemorrhagic pleural effusion, paralysis of a diaphragm or of one of the vocal cords, a Horner syndrome, and evidence of bone, brain, liver or other metastases make the diagnosis quite certain. Tuberculosis is usually easily excluded but may occasionally accompany lung carcinoma. The roentgen signs are diagnostic in a high percentage of cases. The bronchoscope is of great value in confirming the diagnosis and in treatment, but the correct diagnosis can be made in most cases without its use. The finding of carcinoma in a biopsy from an enlarged lymph node, a bronchus, tissue in the sputum, sediment from a pleural effusion, or a piece of tissue obtained by thoracotomy completes the diagnosis. We shall at this time discuss our observations, with special attention to the diagnosis of primary carcinoma of the lung, and shall publish a more complete study at a later date.

AGE, SEX AND RACE

Among our 135 cases we find that 72 per cent occurred between the ages of 41 and 60 years. Twelve patients, or about 9 per cent, were from 21 to 40 years old. Table 1 gives the age incidence.

Ninety per cent of all our patients were chronic smokers, and we believe that the inhalation of tobacco smoke may be an important factor in producing chronic irritation with epithelial metaplasia in the bronchi or bronchioles. There were only twelve cases, or 9 per cent, among Negroes, all of whom were patients at the Cook County Hospital, where about 30 per cent of all the patients are colored. There were 125 men and only ten women in our series.

PATHOLOGIC CHANGES

Certain pathologic changes in this series are of great importance from the diagnostic standpoint, and these will be considered. Of the 135 cases eighty-two, or 60 per cent, occurred in the right lung and fifty-three, or 40 per cent, in the left lung. In the seventy-four necropsy cases there were forty-two in the right lung and thirty-two in the left. The greatest number of carcinomas were found in the right upper lobe with twenty-four, left upper thirteen, left lower twelve, and right lower eleven. Seven involved the entire left lung and six the entire right lung. Only one was primary in the right middle lobe.

All carcinomas of the lung are bronchogenic in origin.² They arise in the trachea, bronchi or bronchioles. There can be no carcinoma primary in the alveoli, as they have no epithelial lining. The tumors arise from a metaplasia of the basal cell layers of epithelium, less differentiated multipotential cells which can reproduce

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columnar epithelium, squamous epithelium, or undifferentiated round or spindle cells. Such metaplasia of the bronchial epithelium has been found in influenza.³ Some tumors may arise from the mucus-secreting glands of the bronchi. There are, therefore, three types of carcinoma: (1) adenocarcinoma, (2) squamous cell and (3) undifferentiated round or spindle cell. In our seventy-four necropsy cases twenty-one, or 28 per cent, were adenocarcinomas, eighteen, or 24 per cent, were squamous cell and thirty-one, or 41 per cent, were undifferentiated round or spindle cell.

TABLE 1—Ages of the Patients

Age	Number of Patients	Per Cent
21 to 30	3	2.2
31 to 40	9	6.6
41 to 50	39	29.0
51 to 60	59	43.7
61 to 70	22	16.3
71 to 80	3	2.2

The round and spindle cell carcinomas are the ones which were in the past often erroneously diagnosed as lung or mediastinal sarcomas.⁴ All this type presented metastases at necropsy. All showed involvement of the bronchial lymph nodes. The abdominal lymph nodes were invaded in 50 per cent of the cases, the brain in 16 per cent and the bones in 21 per cent.

The adenocarcinomas are almost as malignant as the round cell form. All this group presented metastases. Bone lesions were most frequent, with 48 per cent of the cases showing bone metastases.

The squamous cell carcinomas are less malignant than the other forms and offer the best prognosis for early surgical removal. Still six of eighteen cases presented brain metastases. Metastases in the liver, kidneys and adrenals were only one-third as frequent as in the other types.

The great importance of the frequent lymphogenic and hematogenic metastases in the diagnosis of primary carcinoma of the lung will be emphasized when we discuss the different clinical types of this disease. Not only is dissemination by the blood stream (owing to the ready access of the tumor to the pulmonary veins and vena cava) a common occurrence, but also extension from the tracheobronchial lymph nodes to the periaortic, peripancreatic, perigastric, periportal and retroperitoneal nodes. The presence of abdominal tumor masses may easily lead to an erroneous diagnosis.

Of the seventy-four necropsy cases all but one presented metastases, and this case was a squamous cell carcinoma. A knowledge of the histologic types of lung carcinoma is of importance to the clinician as well as to the pathologist. The physician should order a biopsy whenever there are accessible cervical or axillary gland masses, pleural effusions, tumor tissue on bronchoscopic examination, or operation on the chest wall. Bone metastases, tumor tissue found during an exploratory laparotomy, or skin nodules may furnish material for the diagnosis. A knowledge of the three important histologic types is therefore of great diagnostic value. Undoubtedly in the past adenocarcinoma of the lung with abdominal metastases was sometimes mistaken for a primary carcinoma of an abdominal organ unless a complete and careful necropsy was obtained. We know that most of the round cell, oat cell, or spindle cell "sar-

comas" of the lung are really carcinomas of bronchogenic origin. A round cell carcinoma metastasizing in a lymph node may be mistaken for a lymphosarcoma.

Anatomically we have divided our cases of lung carcinoma into five types: (1) intrabronchial, (2) hilar or central, (3) intermediary, (4) peripheral and (5) lobar or diffuse. Such a division is of importance in the early diagnosis of this disease. The physical and roentgen changes, symptoms, and operability depend largely on the location of the tumor in the early stage. These types, of course, are not sharply defined and merge into one another with the progress of the disease.

Associated pathologic lung changes are very frequent and may mask the underlying primary disease. Lobar pneumonia and bronchopneumonia occurred in 28 per cent, chronic pneumonia in 20 per cent, and bronchiectases in 43 per cent. Abscess or gangrene, either in the tumor itself or in the surrounding lung parenchyma, developed in 20 per cent. Pleural involvement with a carcinomatous lymphangitis, hemorrhagic, serous or purulent exudate or marked thickening was found in 50 per cent of the cases at necropsy. Atelectasis of part of a lobe or an entire lobe was often due to bronchus stenosis. Active pulmonary tuberculosis was found in only three of seventy-four cases and is certainly not a factor in the causation of lung cancer. Pneumoconiosis was rare.

SYMPTOMS

The failure to recognize lung carcinoma more frequently can be attributed in part to the great variation in the symptoms of this disease. These symptoms depend on the location and size of the primary tumor, the secondary changes that so often occur, and the location of metastases. In a small group, about 15 per cent, the primary tumor produces no signs or symptoms. Some of these cases can be diagnosed by bronchoscopy if the lesion is in a large bronchus, but

TABLE 2—Metastases in Seventy-Four Necropsy Cases

	Number	Per Cent
Regional lymph nodes (tracheobronchial, bronchial)	65	88
Cervical lymph nodes (clinical finding)	40	54
Axillary lymph nodes (clinical finding)	20	27
Abdominal lymph nodes	28	38
Pleura	33	45
Adrenals	32	43
Liver	29	40
Kidneys	24	32
Lungs	22	30
Bones	21	28
Nervous system	18	24
Pancreas	11	15
Heart and pericardium	10	14
Compression of superior vena cava	9	12
Intestinal tract	8	11
Pulmonary veins (main vessels)	7	10
Spleen	6	8
Skin	7	10
Esophagus	5	7
Thyroid	4	5
Cervical sympathetics	7	10
Inferior vena cava	3	4
Pulmonary artery (compression)	2	3
Testicle	1	1.4
Urinary bladder	1	1.4
Seminal vesicles	1	1.4
Aorta (compression)	1	1.4

this is seldom done when there are no pulmonary symptoms. This occult type causes symptoms when lymphogenic or hematogenic metastases develop.

In our large series of 135 cases sixty-nine patients, or 51 per cent, had chiefly extrapulmonary manifestations. The signs and symptoms were predominantly outside the lungs. Only sixty-six patients, or 49 per cent, had symptoms that were largely pulmonary. We have classified our cases into clinical types with reference to the outstanding clinical manifestations (table 4).

3. A. Kanazy, M. Ueber die Veränderungen der grossen Luftwege bei der Influenza. Cor. Bl. f. Schweiz. Aerzte 49: 465 (April 12) 1919.
Winternitz, M. C. Mason, J. M. and McNamara, F. P. The Pathology of Influenza. New Haven, Conn. Yale University Press 1920.
4. Barnard, W. G. The Nature of the Oat Cell Sarcoma of the Mediastinum. J. Path. & Bact. 29: 241 (July) 1926.

Pulmonary Type—In the pulmonary type the symptoms are usually a cough, hemoptysis, pain in the chest, and dyspnea. These symptoms in a person past the age of 40 are very suggestive of carcinoma of the lung. The average duration of symptoms at the time of the first examination was eight months. In a few cases the symptoms dated back three years or longer, and it is interesting that these were mostly cases of

TABLE 3—*Metastases in the Different Histologic Types of Lung Carcinoma*

No of Cases	Type	Tracheo-bronchial Nodes	Abdominal Nodes	Central Nervous System	Liver	Kidneys	Adrenals	Bones
24	Round cell	24 (100%)	12 (50%)	4 (16%)	14 (58%)	8 (33%)	12 (50%)	5 (21%)
21	Adenocarcinoma	17 (81%)	10 (48%)	5 (24%)	10 (48%)	9 (43%)	12 (57%)	10 (48%)
18	Squamous cell	17 (92%)	1 (6%)	6 (33%)	3 (16%)	4 (22%)	3 (16%)	3 (16%)
7	Spindle cell	7 (100%)	4 (57%)	2 (29%)	0	1 (14%)	3 (43%)	2 (29%)
4	Miscellaneous	4 (100%)	1 (25%)	1 (25%)	2 (50%)	2 (50%)	2 (50%)	1 (25%)
74	Totals	62 (88%)	28 (38%)	18 (24%)	29 (40%)	24 (32%)	32 (43%)	21 (28%)

squamous cell carcinoma. In other cases the complaints were of short duration, a few days to a few weeks, with onset with a chill and fever as in pneumonia. A history of repeated attacks of bronchitis, pleurisy or pneumonia was given by 25 per cent of the patients.

The cough is usually progressive and fails to respond to rest or medication. It is dry at first, later often productive of a blood-streaked mucoid or purulent sputum. In some cases there is a sudden onset of the cough with pneumonic symptoms. Because of the bloody sputum a diagnosis of tuberculosis is frequently made, although tubercle bacilli are absent. Later a brassy pressure cough, often with an asthmatic wheeze, causes great discomfort. A persistent cough was present in 106 of our 135 cases, about 80 per cent.

Hemoptysis is often the first symptom of lung carcinoma. At first the sputum is blood streaked only at intervals. Later a severe hemoptysis may occur. We have seen several cases in which there was fatal hemorrhage. Bloody expectoration in the absence of pulmonary tuberculosis or mycosis or cardiac disease is very suggestive of lung cancer. The sputum should always be carefully examined for tissue fragments. Fixation and microscopic sections may make the diagnosis certain. We have found tumor tissue in the sputum in several cases. Hemoptysis occurred in fifty-eight of our cases, or 43 per cent.

Pain is the second most frequent symptom. It is more continuous than in any other thoracic disease except possibly aortic aneurysm with bone destruction. The pain is sharp and lancinating and is usually due to involvement of the pleura, intercostal nerves or bony structures. Metastases in the spine and ribs are very frequent. In patients with pleural effusion the pain does not disappear with the development of the effusion but becomes more and more severe. Such continuous pain in the chest, in the absence of an aneurysm or metastases from some other source than the lungs, is almost diagnostic. Often the pain is aggravated or induced by percussion of the chest. This finding we consider highly significant. Thoracic pain occurred in seventy-nine, or 58 per cent, of all cases, and extra-thoracic pain in fifty-eight patients, or 43 per cent. Ninety-nine, or 73 per cent, suffered severe pain.

Dyspnea may be an early or a late symptom. It may be due to stenosis of a bronchus by the tumor or compression of the trachea or bronchi by lymph node metastases. With the dyspnea there is often an asthmatic wheeze or brassy cough. Other causes of dyspnea are large pleural effusions, pressure on the superior vena cava or pulmonary blood vessels, pericarditis, atelectasis, or acute or chronic pneumonia. Dyspnea was marked in seventy patients, or 52 per cent.

The general effects of lung carcinoma are mainly loss of weight, fever, weakness, night sweats, and fatigue. A leukocytosis is common. Clubbed fingers occurred in 15 per cent of the cases. The symptoms due to metastases or extension from the primary tumor are of great importance, as will be seen from a discussion of the other clinical types.

Osseous Type—This is one of the most frequent forms encountered by us. Of thirty-five patients with bone metastases among 135 cases, we have placed twenty-one in this group. The first complaint is sharp severe pain in the chest wall, often limited to certain ribs, or in the spine, skull, pelvic bones or an extremity. The patient may enter with a pathologic fracture, as did three of our patients. A careful history usually but not always elicits the presence of a cough or hemoptysis. Roentgenograms of the painful parts usually present the changes of osteolytic or osteoclastic metastases. There are irregular small or large areas of bone destruction. We have found them most often in the ribs, skull, pelvic bones, sternum, ends of the long bones, scapula and clavicle. Sometimes large soft tumor masses develop, which may be mistaken for a bone sarcoma. In all cases of osteoclastic bone metastases a lung carcinoma must be considered as the primary site. In our experience lung cancer is one of the most frequent causes of osteoclastic bone metastases. In the differential diagnosis of bone metastases breast, thyroid and kidney carcinoma, melanoblastoma, ovarian carcinoma, and any other malignant condition must be considered. We have recently had two cases of stomach carcinoma presenting bone metastases in the ribs, clavicles and spine.

Cerebral Type—This group is next in frequency. Twenty of 135 patients presented symptoms in the central nervous system. Of these we have included

TABLE 4—*Clinical Types of Lung Carcinoma*

	Cases	Per Cent
1 Pulmonary	66	49
2 Osseous	21	16
3 Cerebral	13	10
4 Cardiac	12	9
5 Gastrointestinal	11	8
6 Lymphoglandular	9	6
7 Hepatic	3	2

thirteen cases in this group because of the outstanding cerebral changes. Five of the patients were admitted to neurologic services. Some were at first diagnosed as cerebrospinal syphilis, meningitis, brain abscess, encephalitis, cerebral hemorrhage, or brain tumor. When a person of middle age has an abrupt onset of signs and symptoms of a rapidly developing intracranial lesion a metastatic lung carcinoma should be considered and the lungs carefully examined and roentgenographed. Any part of the brain or cord may be affected. The cranial nerve centers are often involved, or there is a hemiplegia. Headache is common. The patient may be admitted in coma. A careful neurologic exam-

ination is indicated in every patient with lung cancer. Brain metastases were found in eighteen of seventy-four necropsy cases, or 24 per cent. Not all these presented clinical symptoms.

Cardiac Type—This series includes twelve cases in which heart signs and symptoms were outstanding and the lung changes less evident. The heart, pericardium and great vessels are frequently invaded by the tumor. Cancer of the right upper lobe often compresses or invades the superior vena cava or innominate vein, with symptoms like those of a mediastinal tumor. The clinical picture of a right heart hypertension or decompensation has occurred in a number of cases. In two cases the pulmonary artery was surrounded and compressed, in seven the pulmonary veins were stenosed. The extensive perivascular carcinomatous lymphangitis may cause narrowing of many smaller pulmonary vessels. Infiltration of the pericardium and myocardium occurred in ten cases. Sometimes the inferior vena cava or hepatic veins are involved, producing hepatic enlargement and stasis with ascites, and edema of the lower extremities. The chief symptoms in this cardiac group are dyspnea, cyanosis, edema, cardiac enlargement and occasionally ascites.

Gastro-Intestinal Type—Here we have included eleven cases. The chief cause of the gastro-intestinal signs and symptoms is the presence of abdominal metastases. Thirty-eight per cent of our necropsy cases revealed metastases in the abdominal lymph nodes. These form huge masses in the periaortic, peripancreatic, perigastric and periportal nodes. The liver was enlarged in 24 per cent of all our cases and showed metastases in 40 per cent of the necropsy cases. In four cases a large nodular epigastric tumor was mistaken for a carcinoma of the stomach or colon. Even the roentgen examination may be misleading. We have seen filling defects due to compression or infiltration of the stomach wall. In two cases the metastases led to pyloric obstruction. In three, gastric or duodenal hemorrhages followed compression with secondary ulceration. With jaundice, which occurred in six cases, a carcinoma of the pancreas may be suspected. Nine of our patients complained of difficulty in swallowing, and in six of these the dysphagia was the first complaint. We were able to demonstrate compression of the esophagus by gland metastases in all these cases on roentgen examination with thick barium paste.

Lymphoglandular Type—This form is due to extensive metastases in the supraclavicular, cervical or axillary lymph nodes as well as in the deeper nodes. One of our most valuable aids in the diagnosis of primary lung cancer has been a careful examination for enlarged cervical or axillary nodes. A large hard node is frequently found above the clavicle or behind the head of the clavicle. The diseases that cause the greatest difficulty in differential diagnosis are Hodgkin's disease and lymphosarcoma. When a node is accessible, a biopsy should always be done. In nine of our cases large hard cervical or axillary gland tumors were the outstanding manifestation. In two cases it was difficult to distinguish the gland masses from a primary carcinoma of the thyroid until the lung examination and biopsy showed lung carcinoma. Small carcinomas of the piriform sinus, nasopharynx or accessory nasal sinuses may produce large cervical metastases, and these must be excluded in a differential diagnosis.

Hepatic Type—Here we have placed several cases presenting extensive liver metastases and great enlarge-

ment of the liver accompanied by jaundice. The jaundice is usually due to compression of the larger bile ducts or the common duct. Liver enlargement was found on physical examination in 24 per cent of all our cases. The large liver and icterus may easily lead to the diagnosis of a carcinoma of the head of the pancreas with liver metastases, or a primary malignant hepatoma when the gastro-intestinal tract is normal.

LUNG CHANGES

The physical changes vary greatly with the size and location of the tumor. In about 15 per cent of the cases there are no positive lung changes. These are the patients who present themselves because of bloody expectoration, pain or cough. Until the tumor produces stenosis of a bronchus with atelectasis or involves the peripheral lung tissue the percussion and auscultation may reveal nothing. However, the roentgen examination may be diagnostic even in the early stages.

The endobronchial form produces stenosis of a bronchus with atelectasis. There is dullness with suppressed or absent breath sounds. The chest wall is retracted with reduced mobility. The diaphragm is often elevated and the heart displaced toward the affected side. The absence of adventitious sounds speaks against tuberculosis. With partial bronchial occlusion there may be the characteristic cornage breath sounds, a peculiar type of tubular breathing.

The hilar or central form is one of the most frequent types, because many of the carcinomas originate in a main bronchus. There is often dullness or flatness on percussion to the right of the sternum or to the left of the heart. We have often found paravertebral dullness at the level of the second to fourth dorsal spines. Hard enlarged supraclavicular or axillary lymph nodes point to lung carcinoma. In the nodular type of tumor the phenomena are those of a mediastinal tumor with dullness and pressure symptoms. There is often an asthmatoïd wheeze, brassy cough, distention of the veins of the head and neck, and cyanosis. When flatness extends to the infraclavicular region with suppressed or absent breath sounds, the diagnosis is easy. A high diaphragm with paradoxical movement, a Horner syndrome, paralysis of a vocal cord or dysphagia often occurs and assists in making the correct diagnosis. The abdomen should always be carefully examined for liver enlargement or tumor masses.

The lobar form occurs most often in the upper lobes, where the diagnosis is usually easy to make. There is a peculiar flatness with increased resistance on percussion. The flatness often has a convex lower border. It extends beyond the sternum to the opposite side, because of mediastinal infiltration. This observation one of us¹ emphasized in 1930. Over the area of flatness the breath sounds are weak or absent and the auscultatory changes are minimal. Occasionally loud bronchial breathing is heard when the bronchus is not obstructed. Cornage breath sounds, flatness, bloody sputum and enlarged supraclavicular nodes are the chief characteristics of this form. In the late stage the entire lung may be involved or an extensive hemorrhagic pleural effusion may develop, with little or no cardiac displacement. Aspiration and artificial pneumothorax may be necessary to reveal the underlying lung tumor. The fluid should be examined for tumor cells.

ROENTGEN EXAMINATION

In the diagnosis of primary carcinoma of the lung the roentgen ray is an indispensable aid. Not only will it confirm the clinical diagnosis in a high percentage

of cases but it will also reveal certain cases that cannot be diagnosed in any other way. After a wide experience with numerous postmortem studies we are prepared to state that about two thirds of the cases can be diagnosed from the roentgen study alone. In the other one third a pleural effusion or empyema, pneumonia or lung abscess, marked pleural thickening, or involvement of an entire lung may make the roentgen diagnosis difficult or impossible. Even in this difficult group greater exposure of the affected side will often reveal diagnostic changes. Injection of iodized oil often discloses stenosis of a bronchus by the tumor. An enlargement, distortion and increased density of the hilar shadow on the opposite side, bone metastases, paralysis of a diaphragm, a massive effusion with little or no cardiac displacements, or lung metastases, are all x-ray aids to a correct diagnosis. In difficult cases the bronchoscope may be necessary for the final decision.

The hilar type leads to an enlarged dense hilar shadow. It is often composed of the nodular tumor, bronchial gland metastases, and lymphangitis along the blood vessels and bronchi. A branching radiary shadow invades the lung field, with increase in the size, density and number of the lung markings. The picture is so characteristic that the diagnosis is usually easy. In some cases Hodgkin's disease or lymphosarcoma may produce a similar picture, and then a biopsy of a lymph node or piece of tissue from a bronchus may be necessary for diagnosis. Often there is the picture of a lymphangitis carcinomatosa with numerous small shadows connected by a fine network. Obstruction of a bronchus leads to the picture of atelectasis with traction of the heart to the affected side, often a high diaphragm, and marked reduction in size of the lobe. The border is often sharply defined before tumor infiltration takes place. Atelectasis plays an important role in producing the early shadows of lung carcinoma.

The lobar type produces a very dense shadow. The outline at the interlobar fissure may be sharp and convex. Later it becomes irregular, with many projections into the adjacent lobe. In the upper lobe the convexity of the lower border usually distinguishes carcinoma from tuberculosis or pneumonia. The hilar markings are enlarged, sometimes with nodular tumor shadows. Soon the shadow invades the adjacent lobe, sending numerous branching strands into the lung parenchyma. The diaphragm may stand high, owing to involvement of the phrenic nerve. Iodized oil often reveals the bronchus stenosis. Bronchiectases or abscesses are frequent occurrences in the tumor or surrounding lung tissue. A long exposure of the film is often necessary to reveal them. The tumor is usually radioresistant and does not decrease much after roentgen therapy.

Table 5 gives the important clinical observations in this series of 135 cases of primary carcinoma of the lung. Further details with illustrative cases will be published later.

SUMMARY

Primary carcinoma of the lung is one of the most frequent forms of malignancy in adults. It ranks second to gastro-intestinal carcinoma and constitutes from 6 to 8 per cent of all malignant tumors. About 75 per cent of the cases occur between the ages of 40 and 60 years. In our series of 135 cases it was twelve times as frequent in males as in females.

The right upper lobe is the most common site. The tumors are all bronchogenic in origin and begin as a metaplasia of the basal epithelial cells. There are three important histologic types: (1) undifferentiated round or spindle cell, (2) adenocarcinoma and (3) squamous cell. All types have a marked tendency to produce lymphogenic and hematogenic metastases, but the squamous cell is usually less malignant than the other two types. Of seventy-four cases that came to necropsy only one presented no metastases. Eighty-eight per cent showed hilar gland metastases, 38 per cent abdominal lymph node, 40 per cent liver, 32 per cent kidney, 43 per cent suprarenal, 28 per cent bone, and 24 per cent brain metastases. The chief associated lung changes were pleural effusions (47 per cent), bronchiectases (43 per cent), acute pneumonias (28 per cent), chronic pneumonia (20 per cent), abscess or gangrene (20 per cent) and purulent bronchitis (19 per cent).

In 51 per cent of all cases the signs and symptoms were predominantly outside the lungs, only 49 per cent presented changes that were largely thoracic. This

TABLE 5—Observations in One Hundred and Thirty-Five Cases of Primary Carcinoma of the Lung

	Cases	Per Cent
Positive physical changes in the chest	110	82
Cough	106	80
Pain (thoracic extrathoracic)	99	73
Loss of weight (10 pounds or more)	86	64
Dyspnea	70	52
Hemoptysis	58	43
Purulent sputum	19	14
Cervical adenopathy	53	40
Axillary adenopathy	37	28
Leukocytosis (10,000 or more)	37	28
Fever (1 degree F or more)	37	28
Demonstrable bone metastases	35	26
Liver enlargement	32	24
Cyanosis	28	21
Clubbed fingers	21	15
Dilated veins of neck chest	21	15
Paralysis of diaphragm	20	15
Central nervous system involvement	20	15
Hoarseness	18	13
Astmatoid wheeze	13	10
Recurrent laryngeal nerve paralysis	10	8
Dysphagia	9	7
Horner syndrome	8	6
Skin metastases	7	5
Subleukemic blood picture	6	4
Jaundice	6	4
Anisocoria	4	3

important fact explains the present failure in most clinics to diagnose 50 per cent of the cases. In the hope of bringing the correct diagnoses to 90 per cent, where we think they ought to be, we have divided the cases into the following clinical types and discussed each: (1) pulmonary, (2) osseous, (3) cerebral, (4) cardiac, (5) gastro-intestinal, (6) lymphoglandular and (7) hepatic.

The peculiarly characteristic history of pulmonary well being to within an average period of eight months before seeking medical aid, the development of bronchitis or recurrent attacks of pneumonia or pleurisy, followed by persistent cough, pulmonary or extrapulmonary pain, hemoptysis, and dyspnea should enable the physician to suspect lung carcinoma. A characteristic complex of physical changes is observed in most cases. The roentgen study alone makes the diagnosis possible in at least two thirds of the cases. The bronchoscope is of great value in confirming the diagnosis, but most cases can be recognized without it. The presence of one of the three types of carcinoma in a biopsy specimen from a bronchus, lymph nodes, pleural exudate, or tissue found in the sputum will establish the diagnosis.

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USE OF THE X-RAYS IN PULMONARY TUBERCULOSIS

FROM THE POINT OF VIEW OF PROGNOSIS

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The value of the x-rays in the diagnosis of pulmonary tuberculosis has been well established. I also feel that, without their use, one would be greatly handicapped in following the clinical course of the disease, as well as in determining the proper treatment. Besides this, I am strongly of the opinion that much valuable information can be obtained by a careful study of chest x-ray films in predicting the future trend of the disease and the patient's chance of ultimate recovery.

In this study the following points are to be considered purely in relation to their effect on prognosis: 1. Extent of disease as based on the roentgen examination. 2. Character and types of shadows. 3. Absence or presence of cavities. 4. Behavior of cavities. 5. Increase or decrease of x-ray shadows. 6. Prognostic significance of (a) fever versus x-ray shadows, (b) fever versus comparative x-ray studies, and (c) relapse versus x-ray shadows. 7. Relapse in relation to comparative x-ray studies.

In order to obtain some statistics on these various points I have selected groups of several hundred consecutive admissions to Trudeau Sanatorium, have studied the x-ray films of these patients, and then have followed the patients in each group for a period of years.

EXTENT OF DISEASE AS BASED ON THE ROENTGEN EXAMINATION

Undoubtedly, all will agree to the general supposition that the greater the lung involvement the worse the prognosis, yet I thought it might be of interest to see just what the actual figures would show. I therefore

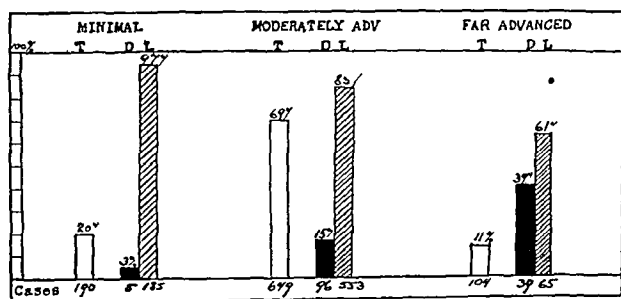


Chart 1—Incidence of death at the end of five years in 943 cases classified on the basis of the roentgen examination. T total D dead L living

took 943 routine cases admitted to Trudeau Sanatorium within the past seven or eight years and divided them into the three usual groups as determined by the roentgen examination.

A. Minimal. Disease to the second rib and fifth vertebral spine on one side or one-half this amount on both sides.

B. Moderately advanced. Infiltration of one lung or its equivalent, consolidation of one lobe, or cavity up to 4 cm in size.

C. Far advanced. More involvement than the moderately advanced.

I then looked up their records at the end of five years. These showed that at the end of this period

only five patients, or 3 per cent, had died from among the 190 cases in the minimal group. There were ninety-six, or 15 per cent, from the 649 moderately advanced cases, while, of the 104 far advanced cases thirty-nine patients, or 39 per cent, had died. Chart 1 therefore gives some idea of a patient's prognosis at the end of five years, based purely on the amount of lung involvement as revealed by the x-ray film.

CHARACTER AND TYPES OF SHADOWS

In recent years there have come to be recognized two rather distinct types of lung shadows cast on the x-ray film, which have been interpreted as indicating equally distinctive underlying pathologic changes. The first of these has the appearance of soft, fluffy smoke, with

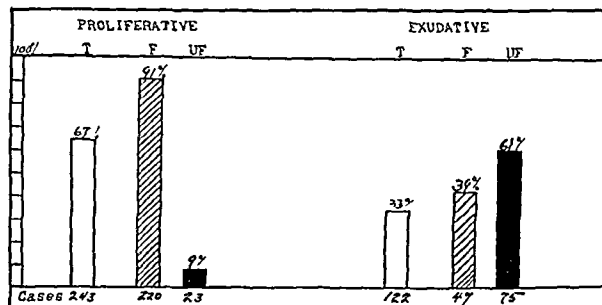


Chart 2—Progress of 365 cases classified according to types of x-ray shadows. T total F favorable UF unfavorable

very ill defined margins. It is felt that the disease casting this shadow is apt to be both recent and active. To this type of shadow the name "exudative" has been applied. The other type referred to is indicative of the "proliferative" lesion, which, it is felt, is of much longer duration and more fibrous in character. Here the appearance of the lesion on the film is much more clean cut and stringy, with margins well defined.

The patients in these two groups have been studied from a rather different angle than the others here reported. On entrance to the sanatorium 365 cases were classified, according to the films alone, as 243 proliferative and 122 exudative. The behavior of the lesion while the patients were with us under treatment was then watched by their subsequent roentgenograms and the results were recorded as simply "favorable" or "unfavorable." These results were indeed most enlightening, as shown by chart 2, for we found that 220, or 91 per cent, of our "proliferative" group had done well whereas only forty-seven, or 39 per cent, of our 122 "exudative" cases had made satisfactory progress. Hence the character of the shadow and its proper interpretation are of great value in determining the future course of the disease.

PRESENCE OR ABSENCE OF CAVITIES

Examination of 925 routine admissions to Trudeau Sanatorium ten or fifteen years ago reveals that cavities were read in the films of 392, or 42 per cent, of these cases. Without taking into consideration the amount of involvement in the lungs of these patients but simply the fact of a cavity being present, it is found that at the end of five years 139, or 35 per cent, are dead, while of the remaining 533 patients whose films failed to disclose the presence of a cavity only 108, or 20 per cent, had died. Thus the percentage of deaths among cavity cases was within 5 per cent of double that among noncavity cases.

BEHAVIOR OF CAVITIES

Another angle of this question, which is most important, is how these cavities behave while under treatment. I therefore followed the course of 336 patients with cavities while they were with us and found that in 122 cases or 36 per cent, the cavities remained approximately the same size. Of these patients forty-one, or 34 per cent, died within five years after leaving the sanatorium. In eighty-one cases, or 24 per cent, the cavities increased in size and this group showed forty-four, or 54 per cent, dead in five years. The films revealed that in 133, or 39 per cent, of the cases the cavities had decreased or had disappeared completely. Of these more fortunate individuals only fifteen, or 11 per cent, had succumbed during the five year period.

THE EFFECT OF INCREASE OR DECREASE OF
X-RAY SHADOWS AS DETERMINED BY
COMPARATIVE FILMS

The figures for charts 5, 6, 7, 8 and 9 are based on 600 consecutive admissions to Trudeau Sanatorium in which the patients were followed from three to five years after their discharge. They were then classified into the four groups of well, living, dead and unknown. The well group were either working or were able to do so, while the living group includes those patients who are either continuing treatment or about whom we know nothing further than that they are still living.

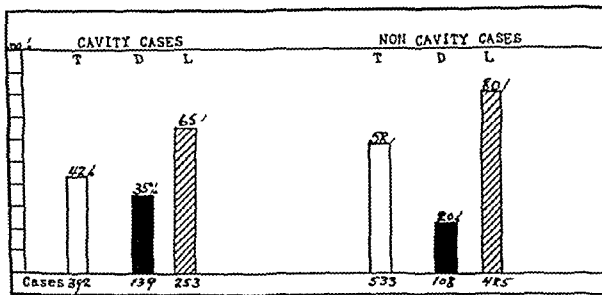


Chart 3—Percentage of deaths at the end of five years in 925 cases with and without cavities. T total D dead L living

Chart 5 is a comparative study of (1) those patients whose x-ray films showed a steady healing of their disease, each successive film showing either fewer pathologic shadows or, at least, that no new shadows had developed, and (2) those patients who at some time during their stay with us received an unfavorable x-ray report, stating that a comparative reading had shown an increase of infiltration or else that a previously mentioned cavity had become larger.

Fortunately, 80 per cent of the series fell into the former group and of those 72 per cent are found to be well and only 9 per cent dead. These figures are indeed striking when they are compared with the 20 per cent of patients whose films had shown a progression of their disease, for here the percentage of deaths is actually higher than that of recoveries, namely, 37 per cent dead as against 36 per cent recovered.

PROGNOSTIC SIGNIFICANCE

Of (1) *Fever versus X-Ray Shadows*—From a previous study it had been determined that from a clinical point of view the presence of fever was indicative of a graver prognosis than any other symptom or laboratory finding. I therefore thought that it might be instructive to compare the significance of this symptom with the five year outcome of patients who had shown an increase in their comparative x-ray films while they were in the institution. I found that in our series of

600 patients 168, or 28 per cent, had had fever of 99.6 F or over for five consecutive days which we were unable to account for from any other source than their tuberculosis. Analysis of these fever cases discloses that only 45 per cent of the patients are well, while 42 per cent died within five years.

As unfavorable as these figures seem to be, it is found that those patients showing a progression of their disease as determined by roentgen examination have just as serious an outlook as their fellow patients who have

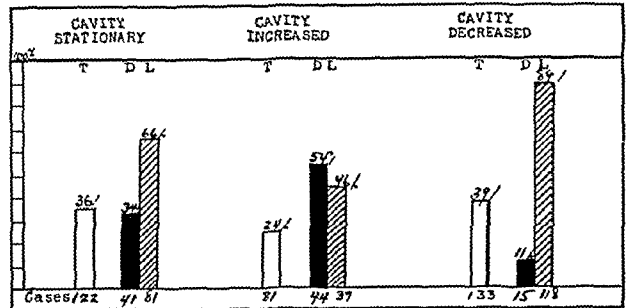


Chart 4—Percentage of deaths at the end of five years in 336 cases classified as to behavior of cavities under treatment. T total D dead L living

a persistent elevation of temperature. In chart 6 the two conditions are treated independently of each other, whereas of course they are frequently found associated in the same patient. This point will be illustrated later. The most striking thing to note in this chart showing the five year results in patients having an increase in their comparative x-ray shadows is the fact that at the end of this time 1 per cent more are dead (37 per cent) than are well (36 per cent).

Of (b) *Fever versus Comparative X-Ray Studies*—Chart 7 takes up various combinations of patients with and without fever and also with and without increased x-ray shadows. The columns on the left represent sixty patients, or 9.5 per cent of our total in whom both elevation of temperature and increased x-ray shadows were noted. Among these only 23 per cent were well at the end of five years, while over twice this number, or 51 per cent, had died.

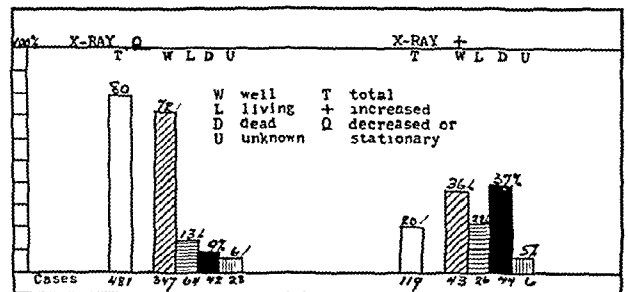


Chart 5—Increased versus decreased x-ray shadows in 600 cases followed from three to five years

The next columns to the right show that in 450 patients, or 75.5 per cent, fever was not noted during their stay with us and the x-ray shadows showed the pulmonary process either to have remained unchanged or to have improved. Under these conditions 72.5 per cent are well with only 8 per cent of deaths.

Again moving to the right on the chart one finds sixty patients, or 10 per cent of the total, in whom no fever was present, yet the x-rays showed a progression of their disease. The "wells" immediately drop to 48 per cent and the deaths rise to 23 per cent. It is to

be noted particularly that increased x-ray shadows are found in 10 per cent of patients in whom this fact is not indicated by the presence of fever

The series to the extreme right of this chart indicates that in only 5 per cent of patients having fever did the x-rays fail to show a progression of their disease, while

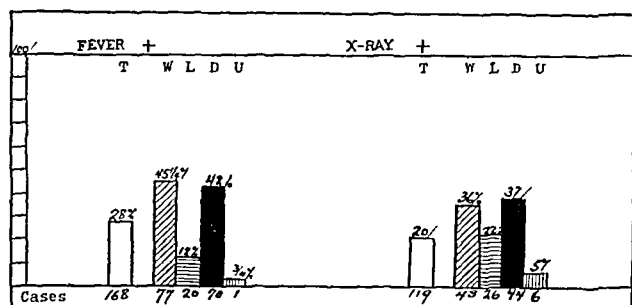


Chart 6—Fever versus increased x-ray shadows in 600 cases followed for five years T total W well L living D dead U unknown

in this small group with fever but no unfavorable x-ray changes the well column reached 60 per cent and the deaths 20 per cent

Of (c) *Râles versus X-Ray Shadows*—The next question to be considered is a comparative study of the importance from a prognostic standpoint of increased and decreased x-ray shadows versus increased and decreased physical signs (râles). Chart 8 seems to show rather clearly that progression of the disease as shown by the roentgen examination is of much graver significance than when it is indicated by physical examination. Of the patients showing an increase of this disease as determined by a larger area over which râles are heard, 55 per cent are well after five years

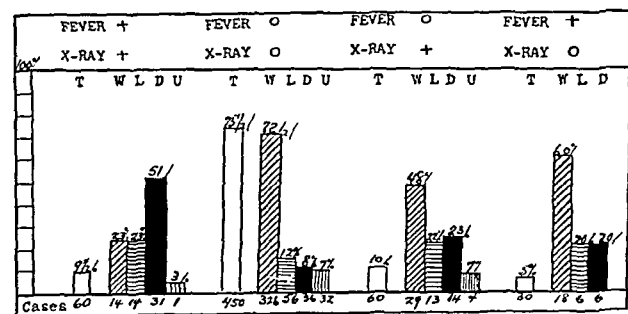


Chart 7—Comparative x-ray studies versus fever in 600 cases followed for from three to five years T total W well L living D dead U unknown

as contrasted to only 36 per cent of "wells" among those whose increase of trouble was shown by the x-ray film. The latter group shows 37 per cent of deaths as contrasted to 22 per cent of those having increased râles. It is interesting to note that there is practically no difference between the x-ray and râle groups in those patients in whom, by either of these two methods of examination, no change or an improvement in their lesions is noted

RELAPSE IN RELATION TO COMPARATIVE X-RAY STUDIES

Chart 9 takes up the matter from a slightly different angle. Here we have followed the yearly report cards of our 600 patients and have divided them into the following groups

1 Those whom we have classified as "cured," 53 per cent of the series, refer to those patients who left the

sanatorium in good condition and have remained "well" ever since. In this group only 11 per cent had x-ray increases while with us

2 This class is made up of patients, 11 per cent of the series, who, although they have been "well" for the past one or two years, have had a relapse of their disease at some time during the five year period. Thirteen per cent of this group while with us had had unfavorable x-ray reports

3 Sixteen per cent of our series after leaving us either relapsed or remained chronically ill. This result was very accurately predicted by their x-ray films, which showed a progression of their disease in 29 per cent of the cases

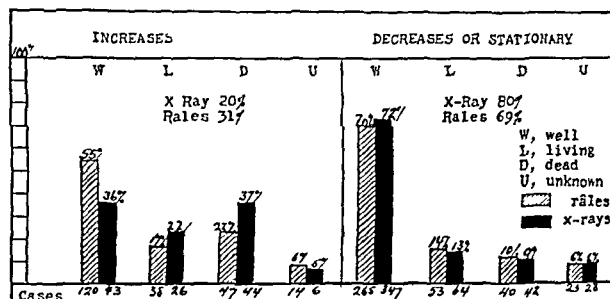


Chart 8—Râles versus x-ray shadows in 600 cases followed for from three to five years

4 Among the 14 per cent in our "dead" group the "handwriting on the wall" was fairly well shown by the fact that 49 per cent of them showed unfavorable comparative x-ray films while they were still patients in the sanatorium

5 The "unknown," or those on whom we have no follow-up record, are only 6 per cent and need no further mention

The groups just mentioned, together with the figures quoted, are shown in chart 9

CONCLUSIONS

The study indicates that

1 The extent of lung involvement greatly influences the prognosis in pulmonary tuberculosis, the death rate being in direct proportion to the amount of disease

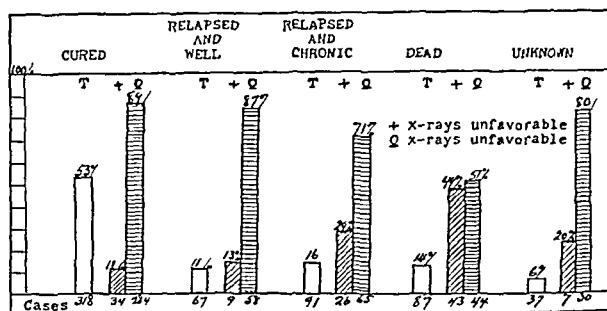


Chart 9—Incidence of relapse in relation to comparative x-ray studies in 600 cases followed for from three to five years

2 The prognosis in the "exudative" type of disease is decidedly more unfavorable than in the "proliferative" type

3 The presence of cavities nearly doubles the probability of death within five years

4 Cavity cases showing improvement under treatment have approximately five times as favorable prognosis as those in which the cavities become larger during sanatorium residence

5 Patients whose comparative roentgen examinations are constantly favorable under sanatorium treatment have more than twice as good a chance of being well at the end of a five year period and only one fourth as great a chance of being dead as those who have increased x-ray shadows

6 Increase in comparative x-ray studies suggests a prognosis about equally unfavorable with that indicated by the presence of fever

7 Patients with both fever and increased x-ray shadows have six times as unfavorable an outlook as those who are free of fever and whose roentgen examinations show consistent improvement

8 Increased comparative x-ray shadows are of much graver prognostic significance than increased physical signs (râles)

9 The yearly follow-up records of 600 patients show that the relation of "well," "relapsed but now well," "chronic," and "dead" is in direct ratio to the incidence of x-ray increases while they were under our care

105 Main Street

THE ACTUAL VALUE OF CARBON DIOXIDE-OXYGEN INHALATION

IN ACCELERATING THE REDUCTION OF TOTAL BODY ALCOHOL

HENRY NEWMAN, M.D.

AND

JOHN CARD, M.D.

SAN FRANCISCO

It has long been known that the metabolism of alcohol in the body proceeds at a constant rate for the individual,¹ and the difficulty of effecting a change in this rate has been frequently remarked.²

Robinson and Selesnick³ have recently reported striking reduction of the venous blood alcohol in inebriates who have been subjected to the inhalation of a mixture of 90 per cent oxygen and 10 per cent carbon dioxide for a period of thirty minutes. This amounted in a number of cases to approximately one fourth of the original value. They state that this is "proof of the efficacy of carbon dioxide-oxygen inhalation in causing an accelerated significant decrease in total body alcohol level," since, as they further state, "an accelerated decrease in venous blood alcohol with carbon dioxide-oxygen therapy represents an accelerated decrease in total body alcohol."

Such a striking effect certainly merited experimental investigation. The first obstacle to this was the mixed nature of the therapy, as both carbon dioxide and oxygen were employed simultaneously. Fortunately, however, Fleming and Reynolds² have investigated the effect of oxygen inhalation on the rate of disappearance of alcohol from the blood and found it to be negligible, while Brach⁴ found the lethal dose of alcohol for

rabbits to be the same in an atmosphere of oxygen as it was in air. Thus we need concern ourselves with carbon dioxide alone. As early as 1924 Hunter and Mudd⁵ administered a test dose of alcohol to a single subject on two occasions, once with and once without inhalation of carbon dioxide. They interpret their results to indicate that the reduction of blood alcohol proceeds more rapidly when carbon dioxide is administered, but this interpretation is not agreed to by Fleming and Reynolds,² who found no effect from inhalation of either carbon dioxide or oxygen.

Since the absence of reduction of blood alcohol in some of the cases reported by Robinson and Selesnick is ascribed by them to the possibility that further absorption from the gastro-intestinal tract took place, we determined to obviate this chance for error by administering the alcohol intravenously. To each of two human subjects a dose of 2 cc of ethyl alcohol per kilogram of body weight was administered intravenously, as a 20 per cent solution in physiologic solution of sodium chloride, the injection taking one hour. An hour was allowed to elapse for equilibration of the alcohol between the blood and tissues, at the end of which time the first blood sample was taken. After another hour a second blood sample was taken, the minute volume of respiration determined with a spirometer, and inhalation of carbon dioxide 10 per cent and oxygen 90 per cent begun, an open slot mask being used, so that no rebreathing occurred. This was continued for thirty minutes, during which time the respiratory minute volume was twice determined and blood samples were taken. After the inhalation period blood samples were again obtained at appropriate intervals. The alcohol content of all the samples was determined by a modification of the method of Cannan and Sulzer.⁶ The curve of the blood alcohol in one of these subjects is seen in the accompanying chart. It will be noted that the rate of fall of the blood alcohol significantly increases during the period of inhalation.

Change in the Rate of Decrease of Venous Blood Alcohol Effected by Inhalation of Carbon Dioxide-Oxygen Mixture After a Dose of Alcohol of 4 Cc per Kilogram Intravenously in Dogs

Animal	Maximum Blood Alcohol Mg per 100 Cc	Before Inhalation	Rate of Decrease of Blood Alcohol in Mg per 100 Cc per Hour			
			During Inhalation	¼ Hr after Inhalation	1½ Hrs after Inhalation	
1	381	22	34	6	19	
2	372	23	20	2	24	
3	370	18	48	6	18	

but that on its discontinuance a rise occurs, followed by a period of slower fall, and finally a rate comparable to that before the inhalation was begun.

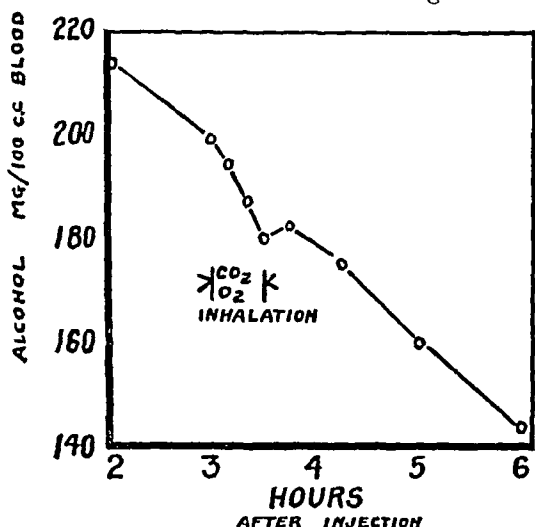
To confirm these results with higher doses, giving blood alcohol levels comparable to those of the inebriates reported by Robinson and Selesnick, the same procedure was repeated, using dogs, with a dose twice that given to the human subjects, namely, 4 cc per kilogram. This was sufficient in all cases to produce a state of coma from which the animals could not be aroused. It is of interest from the clinical point of view, with which we are not here specifically concerned, that none of the dogs were any more easily aroused after the carbon

5 Hunter F T and Mudd S G Carbon Dioxide Treatment in Acute Alcoholism Boston M & S J 190 971 (June 5) 1924
6 Cannan R K and Sulzer R Estimation of Alcohol in Blood Heart 22 148 (April) 1924 Newman H W The Determination of Ethyl Alcohol in Body Fluids J Pharmacol & Exper Therap to be published

From the Division of Neuropsychiatry Department of Medicine Stanford University School of Medicine
Supported by a grant from the Rockefeller Fluid Research Fund of the Stanford University School of Medicine

1 Mellanby Edward British Medical Research Committee Special Report Series 31 1919 p 1 Newman H W and Cutting W C Alcohol Injected Intravenously Rate of Disappearance from the Blood Stream in Van J Pharmacol & Exper Therap 54 371 (Aug) 1935
2 Fleming Robert and Reynolds Dorothy Experimental Studies in Alcoholism IV Attempts to Modify Concentration of Alcohol in Blood After Intravenous Administration of Alcohol J Pharmacol & Exper Therap 54 236 (June) 1935 Newman H W and Cutting W C The Action of Dinitrophenol and Insulin in Accelerating the Metabolism of Ethyl Alcohol J Clin Investigation 14 945 (Nov) 1935
3 Robinson L J and Selesnick Sydney The Treatment of Acute Alcoholism with Ten Per Cent Carbon Dioxide and Ninety Per Cent Oxygen Inhalation J A M A 105 1734 (Nov 30) 1935
4 Brach A L Action of Oxygen in Counteracting Alcoholic Intoxication Am J Physiol 107 610 (March) 1934

dioxide-oxygen inhalation than before. The results of the procedure in the three dogs used are given in the accompanying table, in which it may be seen that in each case the increased rate of decline of blood alcohol is followed by a period in which there is little if any fall, after which the rate again returns to one comparable to that before inhalation was begun.



Curve of blood alcohol against time after the injection of 2 cc of ethyl alcohol per kilogram in man showing increased rate of fall during carbon dioxide oxygen inhalation with compensatory rise following

The significant fact obtained from this experimentation is that there is no actually significant change in the rate of decrease of total body alcohol brought about by the inhalation of the carbon dioxide-oxygen mixture for a period of a half hour. True, there is an acceleration of the decrease of venous blood alcohol during the period of inhalation, but this is compensated for by a subsequent period during which the blood alcohol declines slowly or even rises, so that the fundamental rate of decrease is not appreciably affected. The explanation of this is simple. During the period of inhalation there is, to be sure, an increase in the amount of alcohol eliminated in the breath, which measurably decreases the amount of alcohol in the blood-stream, accounting for the more rapid decrease in blood alcohol observed. This decrease is not, however, immediately participated in by the tissues, which hold the great bulk of the total body alcohol, since it has been shown that a considerable period is required for equilibration of alcohol between the blood and the body tissues.⁷ Subsequently, when the respiratory elimination has fallen to normal after the inhalation has been discontinued, equilibrium is again established by movement of alcohol from the tissues into the alcohol-depleted blood, accounting for the period of decreased rate of fall or even rise of blood alcohol.

The fact remains that in order for even the blood, if not the body tissue, alcohol to accelerate its rate of decline there must be some increased elimination of alcohol through the lungs. An accurate appraisal of the magnitude of this increase may be arrived at if one knows the alcohol content of the expired air and its volume. The minute volume of respiration in our two human subjects changed, on an average for the two, from 6.5 liters to 35.5 liters, or over fivefold. This is an increase of 29 liters per minute, or 870 liters for

the half-hour period of the inhalation. Now it has been shown that a liter of expired air contains from one fourth to one half as much alcohol as a cubic centimeter of blood taken at the same time.⁸ The average blood alcohol value in our subjects over the period of inhalation was 1.6 mg per hundred cubic centimeters, so that the content of their breath must have been from 0.4 to 0.8 mg per liter. Multiplying the higher figure by the number of liters of increased respiration during the inhalation period gives 0.696 Gm of alcohol as the amount by which the total body alcohol has been reduced by the treatment. When one considers that this is less than 1 per cent of the total body alcohol at that time, it is readily seen that the decrease could hardly be called significant.

It is not our purpose in this paper to discuss the efficacy of such a mixture of gases in effecting clinical improvement in cases of severe alcoholic intoxication, in which much of the danger lies in depression of the medullary centers, among them the respiratory center, which is subject to stimulation by carbon dioxide. Indeed, there may be even other factors operating, as evidence the remarkable effect of carbon dioxide inhalation in catatonic stupor. Nevertheless, it has been conclusively shown that whatever improvement takes place cannot be accounted for by a reduction of total body alcohol, reduction of venous blood alcohol notwithstanding.

CONCLUSION

The inhalation of carbon dioxide 10 per cent and oxygen 90 per cent for a period of thirty minutes is not effective in significantly reducing the total body alcohol.

Clay and Webster streets

EXTRANEOUS SHADOWS COMPLICATING UROGRAPHY

WITH SPECIAL REFERENCE TO RADIOPAQUE PILLS

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AND

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CHICAGO

The roentgen diagnosis of intra-abdominal pathologic conditions is difficult largely because of the many organs contained within the abdomen. When their shadows can be distinguished, the single roentgenogram necessarily presents them with more or less overlapping of outlines. If the pathologic process suspected expresses itself in calcifications, it is often difficult to localize these as being in a particular organ.

This situation is especially trying in urologic conditions, in which concretions play a leading role and the area traversed by the involved tract is extensive. While urinary concretions may be fairly characteristic, they are not always so and may be hard to differentiate from calcifications in nearby structures. Also, there may occur extraneous densities, of more or less accidental origin, to confuse the picture further.

From the fairly extensive literature on the subject, Holmes and Ruggles¹ have gathered the following list of densities that may simulate renal concretions.¹

⁸ Haggard and Greenberg.⁷ Smith, Sydney, and Stewart, C. P. *Diagnosis of Drunkenness from the Excretion of Alcohol*. Brit. M. J. 1 87 (Jan 16) 1932.

⁷ From the Department of Radiology, University of Illinois College of Medicine.

¹ Holmes, G. W. and Ruggles, H. E. *Roentgen Interpretation*. 3 Philadelphia: Lea & Febiger, 1926. pp. 285-286.

⁷ Haggard, H. W. and Greenberg, L. A. *Studies in the Absorption, Distribution and Elimination of Ethyl Alcohol*. J. Pharmacol. & Exper. Therap. 52: 150 (Oct) 1934.

Those shadows due to material in the bowel, such as fecal masses enteroliths, fruit pits, opaque salts, such as bismuth and barium (especially residues in diverticula of the colon), pills of ferrous carbonate and phenyl salicylate capsules 2 Foreign bodies or enteroliths in the appendix 3 Gallstones 4 Calcified glands 5 Tuberculous foci in the kidneys 6 Calcified tumor masses in the pancreas or in contiguous structures 7

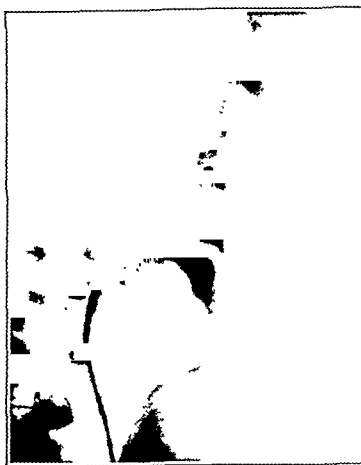


Fig 1 (case 1)—Retrograde pyelogram showing opaque pills in close proximity to contrast medium

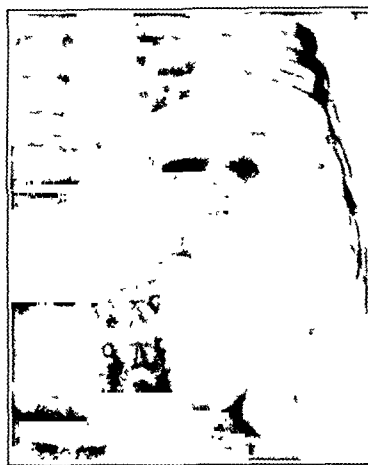


Fig 2 (case 2)—Anteroposterior film showing one opaque pill in lower part of esophagus and other opaque pills in the cardiac end of the stomach

Increased density of the tip of a transverse process 8 Small areas of density in the spleen 9 Calcification in a blood clot or surrounding a foreign body (including the ever troublesome phlebolith) 10 Shadows from fibromas, scars or dressings 11 Artefacts present in the film or screen

Case² calls attention to the shadows cast by warts, and Young³ found that articles of clothing coming into the field may be confusing

Within the last two years at the University of Illinois Research and Educational Hospitals, we have seen a number of urologic cases presenting localized dense shadows which shifted disappeared and reappeared in a startling manner

CASE 1—One of the first and most vexing cases was that of H R, a woman aged 28 who entered the hospital Feb 15, 1934. She had had a right-sided pyelitis performed in 1931, which had cleared up quickly, and there had been no exacerbation during a subsequent full term pregnancy

Six weeks prior to her admission to the hospital she had suffered a chill followed by a fever up to 104 F and had developed an aching sensation in the right loin, present only when standing. There was no radiation of the pain and only slight kidney tenderness. There was no dysuria nor frequency, although some pus was found in the urine. She had had an appendectomy and right oophorectomy

The plain film of the urinary tract showed a localized round dense shadow to the left of the second lumbar vertebra and an oval one to the right at the same level. A right-sided retrograde pyelogram was attempted. The film showed no densities. The right ureteral catheter curved back opposite the second lumbar vertebra and the opaque solution ran into the bladder. A subsequent intravenous pyelogram showed a right-sided

pyelectasis. On the left side there was distortion of the pelvic outline and an apparent filling irregularity with two localized accumulations of what was taken to be opaque urine in the parenchymal region. The observations were considered consistent with a pyelectasis of the right side and a pyonephritis on the left side. Two days later a left sided retrograde pyelogram was made and again the two localized densities were seen on that side. The outlined left kidney pelvis, however, showed only questionable dilatation and the opaque fluid did not extend to the localized densities (fig 1). Exploration of the right kidney showed a localized mass in the upper pole and a kink at the ureteropelvic junction. Sections of a biopsy specimen showed what looked like an old infarct or carbuncle.

CASE 2—Soon afterward we examined C H, a boy, aged 4, who had been under treatment at the hospital several months for a Pott's disease of the third lumbar vertebra. He was sent to us with the history of a recurrent B coli urinary infection of several months duration. Recently organisms suspected of being tubercle bacilli had been found in the urine. The films taken after the injection of skiodan showed a localized density superimposed on the twelfth rib on the right side which had to be considered as a possible calculus. On the left side were seen two round dense shadows at about the level of the twelfth dorsal vertebra, of doubtful origin. Check-up films showed no dense shadows, but they reappeared at a subsequent examination.

CASE 3—J S, a woman, aged 51, was referred for a film of the urinary tract because of pain on the right side. The film taken

(fig 3) showed two radiodensities in the left kidney region which may have represented urinary concretions. A second film (fig 4) was taken a few minutes later for a technical experiment and to our surprise this film failed to show the presence of any densities.

Questioning brought forth the information that the patient had ingested several enteric coated ammonium chloride pills shortly before the first film was taken.



Fig 3 (case 3)—Left kidney area showing localized densities that simulate concretions

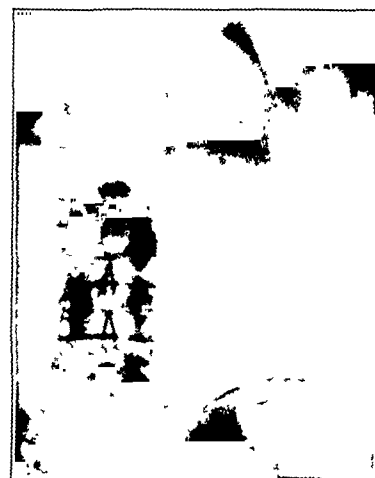


Fig 4 (case 3)—Left kidney area a few minutes later (film taken for technical experiment) densities no longer visible

The similarity of the appearance and behavior of the shadows seen in these and other cases led to a review of their medical management for a possible explanation of their source.

The only medicinal agents that the patients who were examined had been receiving were ammonium chloride and sodium acid phosphate, drugs which in recent years have become the usual means of influencing the pH

2 Case J T. Am J Roentgenol 3:333 (June) 1916
3 Young J S. J Missouri M A 13:502 (Oct) 1916

of the urine.⁴ Under fluoroscopic guidance, therefore we administered pills of these substances to the second patient and were surprised to note the dense shadow cast by the ammonium chloride (fig 2). The sodium acid phosphate was faintly visible and then faded while still in the stomach. The ammonium chloride, being enteric coated, maintained its density while in the stomach and often took many hours to dissolve after passing the pylorus. Recently, Bukey and Drew⁵ have shown that the average emptying time of enteric coated pills from the stomach is almost six hours, although most of them pass out in four hours. The dissolving time of the coating depends on its composition and thickness and some coatings are so efficient as to pass through the entire digestive tract undissolved.⁶ Thus while traversing the alimentary canal it may several

certain substances are combined the resulting density is not always what one would expect by simply adding the absorption indexes of the two substances. This variation may be in either direction and conforms to our experience.

With a view toward determining the absorptive capacity of other pills, we took at random thirty-three pills and tablets of the commonly used drugs and exposed them alongside a graduated aluminum scale to observe their relative densities (fig 5). It will be noted that sodium bromide, 10 grains (0.65 Gm.), and triple bromide, 15 grains (1 Gm.), 8 and 9 respectively in the top row, are the densest. Menville found their shadows much denser than their rating according to formula. Using Menville's figures, which are based on beryllium as 1, the density rating of ammonium

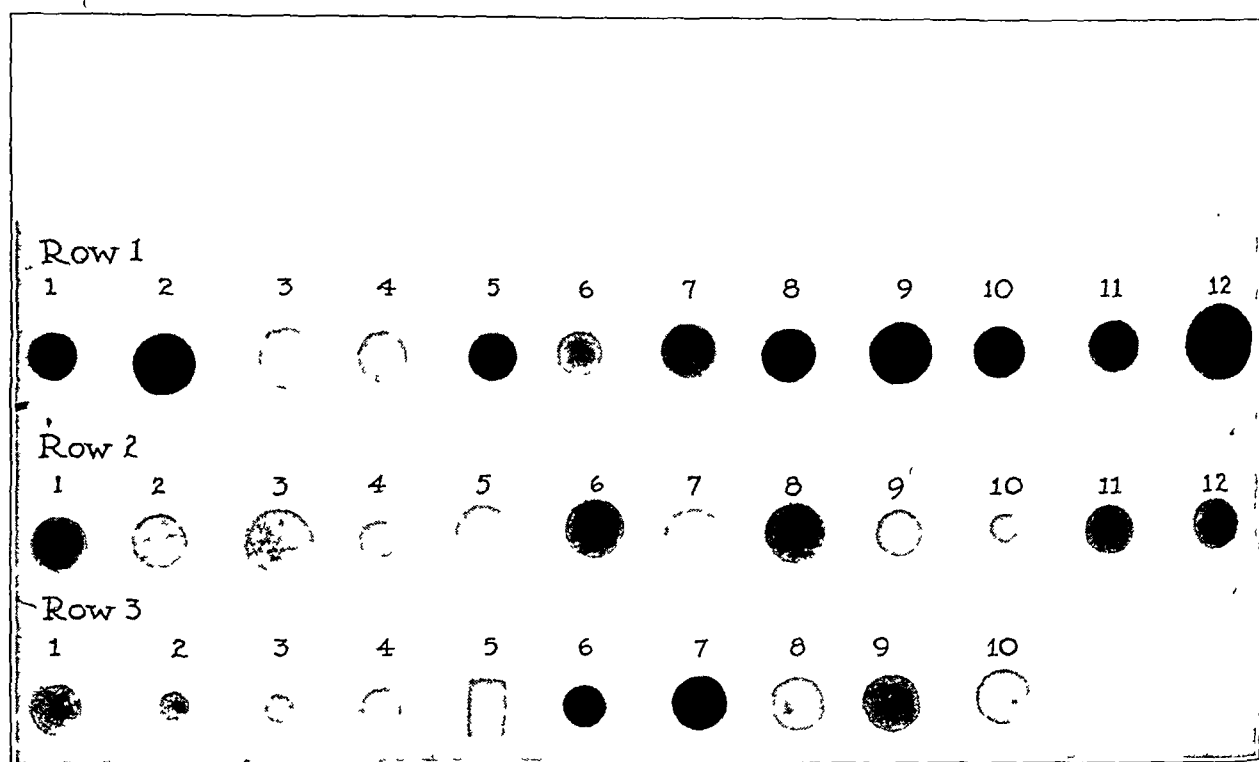


Fig. 5.—Row 1. 1 Ammonium chloride 5 grains (0.3 Gm.) no coating. 2 Ammonium chloride 7½ grains (0.5 Gm.) enteric coated. 3 Acetphenetidin 5 grains. 4 Acetylsalicylic acid 5 grains. 5 Mass of ferrous carbonate 5 grains. 6 Sodium bicarbonate 5 grains. 7 Sodium bicarbonate 10 grains (0.65 Gm.). 8 Sodium bromide 10 grains. 9 Triple bromide 15 grains (1 Gm.). 10 Compound cathartic enteric coated. 11 Calcium lactate 5 grains. 12 Calcium lactate 10 grains. Row 2. 1 Extract of cascara 5 grains. 2 Cinchophen 5 grains. 3 Cinchophen 7½ grains. 4 Digitolin 5 grains. 5 Neocinchophen 5 grains. 6 Methenamine 5 grains sodium acid phosphate 5 grains. 7 Methenamine 5 grains. 8 Methenamine 5 grains sodium acid phosphate 5 grains. 9 Nephritin 5 grains. 10 Glyceril trinitrate 1½ grains (0.0004 Gm.). 11 Ovarian extract 5 grains. 12 Ovarian extract 2 grains. Row 3. 1 Ovarian extract corpus luteum extract thyroid extract. 2 Parathyroid extract ¼ grain (0.006 Gm.). 3 Phenobarbital ¼ grain (0.016 Gm.). 4 Phenobarbital 1½ grains (0.1 Gm.). 5 Phenolphthalein 1 grain (0.065 Gm.). 6 Sodium acid phosphate 5 grains. 7 Sodium acid phosphate 10 grains. 8 Aminopyrine 5 grains. 9 Sodium salicylate 10 grains. 10 Thyroid extract 2 grains. The graduated scale at the top consists of twenty steps of aluminum each step being 1 mm thick.

times be in a position where it would be superimposed on the urinary tract.

Hull⁷ has outlined the fundamentals that govern the roentgen absorptive power of any substance and has evolved a formula to determine the amount of such absorption. Briefly stated this absorption or shadowing is about in proportion to the cube of the atomic number of the substance multiplied by its density. Menville⁸ working with metallic salts, found however, that when

chloride, 5 grains (0.3 Gm.), uncoated, 1 in the first row, is 64.98. Its shadow is denser however, than that of 6 in the third row, sodium biphosphate, 5 grains, the rating of which is 102.31. The shadow of ammonium chloride, 7½ grains (0.5 Gm.), enteric coated, 2 in the first row is disproportionately dense even in comparison with the smaller uncoated tablet next to it. This is probably because the enteric coating on this pill consists mainly of a resin to which is added a certain amount of calcium carbonate a rather radiopaque substance. Its density will also be seen to be much greater than that of pill of ferrous carbonate, 5 grains 5 in the first row, which has been often quoted as a confusing shadow.

4 Herrold R. D. and Ewert E. J. Bol. Asoc. Med. de Puerto Rico 25: 69 (Jan.) 1935.
5 Bukey F. S. and Drew Marjorie J. Am. Pharm. A. 23: 1217 (Dec.) 1924.
6 Bukey F. S. Personal communication to the authors.
7 Hull A. W. J. Radiol. 1: 27 (Jan.) 1920.
8 Menville L. J. Radiology 3: 118 (Aug.) 1924.

THE RADIOLOGIC INVESTIGATION OF
THE SUPERIOR MAXILLARY
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Radiologist St Michael's Hospital
TORONTO ONT

Since the advent of iodized poppy-seed oil little of value has been added to our knowledge of diseases of the accessory nasal sinuses to facilitate radiographic diagnosis. The trend in many quarters has been away from the use of so-called plain x-ray films in favor of the employment of opaque mediums. While holding no brief for either method to the exclusion of the other, I believe that the time may be opportune for a survey of the major diagnostic criteria afforded by plain sinus films. An estimate of the accuracy of the method is attempted as checked by the results in 296 patients on whom the radical antrum operation has recently been performed.

The frequency of infection of the maxillary antrums in sinus disease—variously estimated as occurring in from 75 to 90 per cent of all sinus infections, and the difficulty that may exist in its clinical demonstration in chronic forms—lends to the radiologic examination of the antrums a special importance. Infection of the antrum may be sufficiently obvious at clinical examination and may require only confirmation or evidence as to character and extent. It is, however, a matter of everyday observation that so-called chronic maxillary sinusitis or even repeated subacute infections may fail to cause local symptoms and may remain unsuspected, even though productive of systemic disturbances from direct absorption of toxins or by secondary infections in the joints, the chest or elsewhere. There may be no nasal discharge, though postnasal dropping and repeated head colds are the usual accompaniments of the disease. Transillumination, as has been definitely proved, may be negative even in the presence of an antrum full of mucoid material or polyps. This phenomenon is apparently due to the ability of certain substances to refract light normally. Indeed the antrum may be more brightly illuminated on the diseased than on the normal side, probably because of coincident decalcification of its walls. Further an old healed infection cannot be distinguished by transillumination from one that is recent and active.

Pathologic processes of inflammatory type within the antrum manifest themselves in several ways: by production of pus, by thickening of the mucoperiosteum by polypoid degeneration or cyst formation and by reactive changes in the bony walls. These processes may be identified with considerable accuracy in 'plain' x-ray films. The use of iodized oils is rarely necessary and may completely obscure a valuable indication of disease: the condensing osteitis seen in cases of chronic suppuration and the rarefying type commonly associated with chronic polypoid degeneration of the mucous membrane.

The radiologic examination of the maxillary antrum is seldom necessary in the presence of an acute infection. Intrinsically there is a slight decrease in brilliance of all the sinuses, often occurring first in the ethmoidal cells in appearance much like that seen in allergic individuals in the ragweed season. Such an acute infection may clear up with little or no residual change

or may go on to pus formation. In the latter event if drainage is free one may find only a thickened mucous membrane. The thickening may be such as to be barely visible or may almost entirely fill the antrum cavity. The normal mucous membrane, it will be recalled, is not demonstrable in a roentgenogram. If drainage is completely blocked an empyema of the antrum occurs, and a more or less uniformly dense shadow is produced which almost obliterates the superimposed skull markings, as the shadow of the foramen rotundum and the sphenoidal fissure. If drainage is incomplete or is accomplished intermittently by blowing the nose or by postural means, the antrum may be partially filled with exudate, with air overlying. On examination of the patient in the prone position a diffuse haziness is seen and the radiologist may find it difficult to differentiate between pus and polyps. The distinction may sometimes be made with certainty by examination in the erect position, in which a fluid surface, usually concave superiorly, and with air above may be visible. When the pus is tenacious and small in quantity or when both pus and polyps are present a fluid line may be absent, but an increased cloudiness in the region of the inferior angle will be observed in many cases when films made in the prone position are compared with others made in the erect. Even when the prone position is used, however, reactive changes in the antral walls should provide a clue as to the presence of pus. A slight increase of bone density is evident even early in the development of empyema and before the actual osteitic condensation of the chronic infection has occurred, as the result of congestion in the vascular and lymph channels and marrow spaces. Furthermore, one must at times rely on its presence as the sole means of differentiating between empyema and retention cyst entirely filling the sinus, or between an antrum containing polyps and one that harbors both polyps and pus. In chronic suppuration the marked degree of condensing osteitis is typical of the condition. It involves the walls of the antrum which are thickened by new bone formation, with inflammatory reaction often apparent also in the malar bone and floor of the orbit. In some cases of chronic suppurative pansinusitis the orbit may be the seat of a condensing osteitis and may appear actually chalky in a roentgenogram without there being any clinical evidence of an inflammatory process in the soft tissues of the orbit. The amount of bony reaction in the antral walls may quite obliterate their outline in a roentgenogram. The location of the reaction in bone is proved both by the fact that it often spreads beyond the actual limits of the antrum and by the observation that little decrease in density follows until long after removal of the contained pus or mucous membrane. At operation the bone is hard and pitted; the mucoperiosteum is often adherent and the bone bleeds more than is usual.

After drainage has been accomplished in cases of empyema of the antrums the exact thickness of the mucous membrane may be seen by contrast with the admitted air. While the point is questioned by some observers I believe that the recognition of even slight mucous membrane thickening over all or part of the antrum may be most important in the search for focal infection when the antrum is seen in a quiescent period between recurring attacks. Mucosal thickening is perhaps most easily demonstrated along the antrobasal wall which is seen almost in contour in postero-anterior films. The outer angle and posterior wall of the maxillary antrum are seen to good advantage in the nasal projection, which in many instances also pro-

vides an excellent demonstration of partitions within the antrum. Such partitions may, if complete, produce what is in effect a double cavity, one or both divisions of which may be infected. The septums usually extend from side to side but may run ventrodorsally, producing an inner and an outer division.

Localized areas of hyperplasia may be detected, occurring frequently in or close to the superior angle. A triangular shadow often occupies this angle in the



Fig 1—Small root fragment thrust into the antrum cavity during curettage of tooth socket resulting in a maxillary sinus suppurate.

Infections of dental origin have been observed to occur most frequently in the wake of tooth extraction with curettage of the socket and consequent removal of the protective zone of inflammatory reaction around infected roots, resulting in spread of the infection to the antrum. At times also the antrum floor is actually perforated by the curet and infected material thrust within. Figure 1 shows a root fragment which gained access to the antrum in that way. The pus formed in such cases is of a peculiar foul character which may be identified by the rhinologist at the time of antrum puncture.

Polypoid or cystic change results in mottled or homogeneous decrease in brilliancy producing a dull slatlike image of the diseased area, yet with normal bone detail elsewhere. Such conditions may be differentiated from suppurative processes, as previously remarked, by lack of productive reaction in bone. They do, on the contrary, produce a rarefying osteitis unless accompanied by a chronic suppuration. Polyps and cysts may be outlined most often toward the floor.

ARTEFACTS

Extraneous shadows superimposed on that of the antrum may give rise to errors of diagnosis. They may be caused by bony structures or soft tissues. Not uncommonly, inequalities of density in the superimposed shadow of the occipital bone will produce cloudiness of one side which, however, may change in appearance in the nose-chin and nose-forehead positions and can in any event be identified by stereoscopic study. At times a small asymmetrically developed antrum is seen with dense walls, which may be recognized as anatomically thick by lack of osteitic reaction in the adjacent structures, though the condition is usually apparent

nose-chin position, simulating regional hypertrophy. It is due to the shadow of the soft tissues of the nose. Localized mucous membrane thickening over the floor or more widespread changes are sometimes seen to be associated with infections at the apexes of such teeth as may lie beneath the antrum floor, the most constantly related teeth being the molars. When the antrum is small, the first molar may be omitted from the relationship.

An appearance suggesting heaping up of the mucoperiosteum may be observed at the floor of the antrum in postero-anterior films in patients having unerupted teeth in the distal part of the upper jaw. Other shadows, such as those produced by the petrous bone in poorly made films, need scarcely be mentioned here.

A more deceptive appearance is sometimes caused by an outward bulging of the antronsal wall, which at times may simulate mucosal thickening.

Soft tissue shadows, which may resemble mucosal hyperplasias, may be caused by thick lips, producing a faint crescentic density inferiorly, or by broadening of the soft structures of the nose from pressure in the Waters position, causing a small triangular shadow in the superior angle.

Of far greater importance, however, is faulty technic, which may give rise to misleading appearances with burning out of mucous membrane and other detail in dense contrasty films, while in underexposed roentgenograms the bony walls tend to obscure the lighter shadows.

It may be in order at this point to observe that not every apparent error reported by the rhinologist is actual. It may require only one blowing of the nose to empty an antrum of pus, while the factor of time must also be taken into account. Mucosal thickening of 4 mm has been seen in the antrum of an allergic patient, while on reexamination, ten days later, the lining membrane was barely visible. The reverse may also occur, and in either case a surgical procedure based only on such evidence, without adequate clinical investigation, is apt to prove disconcerting. A somewhat similar experience has at times been reported when a cyst has been ruptured during antrum irrigation. Such structures may be readily mistaken for and reported as polyps, and their absence subsequently at operation may be mystifying to a degree. The demonstration of chronicity in a lesion therefore, as indicated by multiple polyps or more particularly by rarefying or condensing osteitis, is the sole guaranty that the condition found by the surgeon will be essentially that described by the radiologist.

Malignant neoplasms involving the antrum may infrequently originate in the bony walls but are usually found to be carcinomas arising from the mucous membrane. Their differential diagnosis is of course usually impossible radiologically and even the diagnosis of malignancy is difficult or impossible in the early stages on account of the suppurative process which is an almost constant accompaniment of the disease at the stage at which the patient is usually seen. In favorable cases stereoscopic study in two directions may establish the diagnosis especially in my experience, if

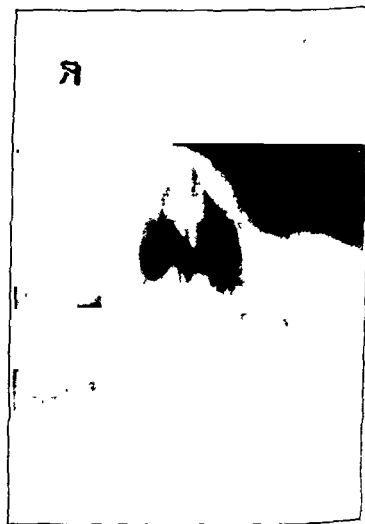


Fig 2—Overgrowth of bone involving the walls of the maxillary antrum showing microscopically structure reported as osteomatous in character.

the antranasal wall is involved. It has been found that inferosuperior or supero-inferior projections have been definitely helpful. At times the neoplasm, after eroding the nasal wall of the antrum, will occupy the nasal space and while eroding the bony septum will cause pressure on it with resulting displacement.

Benign overgrowth of bone of osteomatous character is occasionally encountered. Sometimes, as illustrated in figure 2, the hyperplasia extends over an area of such size as to suggest Paget's disease in which, however, more detailed bone study usually shows the variations of texture often with small islets of condensation, typical of the disease. Dental films of the alveolar process may be found of definite value.

Omission of mention of the postoperative appearance of the antrum has been intentional. The intense reaction set up by radical operative procedures entirely masks the antrum cavity and contents, closely resembling the condensing osteitis of chronic suppuration though at times presenting a more marbled effect. The clinical record, which should accompany each patient referred for roentgen examination, should indicate the nature and date of any operative procedures that may have been carried out.

CORRELATION OF ROENTGEN AND OPERATIVE OBSERVATIONS

In 130 cases, chronic maxillary sinusitis with more or less well marked mucosal thickening was the major finding reported. In 127 cases the diagnosis was confirmed. In eighteen cases of the 127, polyps of small size were found at operation which had not been seen roentgenographically. Three cases considered acute by roentgen examination were found to be of chronic type.

Of 106 cases polypoid degeneration was reported as the outstanding feature and with subsequent operative confirmation. Four antrums in which polyps were reported were found to contain cysts. Of the 102 remaining, in two instances pus was reported to be present in quantity and was not evident to the surgeon, in four pus in quantity was found and had not been reported, in two cases polyps of a centimeter or more in diameter were removed when only mucosal thickenings had been reported.

Thirty-eight cases were described as showing evidence of barely demonstrable osteitic reaction, with no definite mucosal thickening pus or polyps present. They were considered as representing residual changes from an old infection not active at the time of examination.

Of this group six contained one or more very small polyps not visible preoperatively or on reexamination of the films.

In twenty-two cases, frank empyema was reported and confirmed at operation. Of these, ten were reported by the surgeon to have contained polyps, the presence of which was entirely masked in the roentgenograms by the contained pus.

The difficulties in the way of an estimate of accuracy of this kind are appreciated. The various groups overlap while osteitic reaction of various degrees runs through the entire series. The presence of small amounts of pus was also a frequent finding. Further, errors made on the side of missed lesions are less apt to be uncovered the surgeon being doubtless sometimes deterred from operation by reason of a negative roentgen report. Nevertheless a survey of the tabulated results of these cases indicates that the radiologic diagnosis of chronic maxillary sinusitis made on "plain" films was essentially correct in almost every

instance. I believe that the presence of polyps in an antrum containing definite mucosal thickening, especially if an osteitic reaction is present, does not materially alter the clinical conduct of the case. In the thirty-eight cases of the 296 described as representing the end result of an old healed infection this may not apply. They form the borderline group, and it will be seen that, while definite evidence of disease was not lacking, a detailed description of the pathologic changes present was not accurate in six of thirty-eight antrums examined. In this group only a slight haziness was observed radiologically over the suspected antrum, with no definite pus or polyp formation evident. The periosteum in several instances was apparently thickened while at operation the mucous membrane was found to be adherent, the bone bled readily and was hard to the curet. I feel that the knowledge of the presence of even slight polypoid degeneration of the mucosa might influence treatment in such cases as indicating the probability of reinfection when healing was considered to have occurred. At present, therefore, I am studying the ethmoidal cells closely for a clue as to similar change occurring in that area, where it is more readily demonstrable. I believe that if doubt still exists an opaque medium may well be used to fill the antrum, by whatever method is preferred by the operator. The preliminary plain films will then establish the presence of minimal osteitic reaction, the iodized oil may reveal the slight associated polypoid degeneration of the mucous membrane.

ABSTRACT OF DISCUSSION

DR. FREDERICK M. LAW, New York. I have just returned from a large gathering of otorhinologists in Toronto. In talking with these doctors I found a great number of well known men who do not rely on interpretations of roentgenograms of the sinuses. It has been about thirteen years since attention was first called to the changes in the bony walls as a means for diagnosis but it is surprising how many reports are submitted to me in which the diagnosis is made simply on the opacity or cloudiness of the sinuses, and there the reports end. This is the kind of report which those doubting Thomases have received. It does not contain the information the surgeon desires. What he wants to know is the character of the contents of the sinuses, the quality of the bony walls and what are the anatomic difficulties which he may encounter in operating. These are facts which are evident when one looks at a perfectly made set of sinus films. Just as Dr. Shannon has pointed out there is a definite change in the characteristics of the bony walls of the sinuses in which disease exists, and the omission of such information can be laid to carelessness or ignorance on the part of the interpreter. There are technical errors of which the rhinologist is not aware and with which radiologists are familiar, thus showing the absolute necessity of cooperation and consultation. Allergy produces the greatest difficulty. As demonstrated in a case recently a relative of mine is peculiarly allergic to watermelon. I made a set of sinus roentgenograms and they were perfectly clear. Then I gave her a piece of watermelon and in thirty minutes made another set which were four plus positive sinuses. This shows the necessity for a history. If one would refuse to make a roentgenogram until one has the clinical data that error might be minimized.

Not Necessarily Spinach.—Please note that green vegetables need not mean spinach. Spinach is by no means in a class by itself as a vegetable rich in vitamin A value. In tests thus far available escarole, kale and parsley have shown higher vitamin A values than spinach. Other dark green leaf vegetables such as beet greens, chard, dandelion and turnip tops rank about with spinach in this respect. (It is time for the science of nutrition to throw off the incubus of too close an identification with spinach!)—Sherman H. C. Food and Health, New York, Macmillan Company, 1934.

INTRAVENOUS AND RETROGRADE UROGRAPHY

A COMPARATIVE STUDY

R. E. CUMMING, M.D.

AND

G. E. CHITTENDEN, M.D.

DETROIT

Urology stands on two sturdy supporting limbs the instruments for precise visual diagnosis, of which the cystoscope is the foundation stone and urography. Because of accuracy in diagnosis and the controlling power throughout the course of most maladies of the urinary tract, afforded by their regular adaptation, an unpretentious specialty has risen to a very high plane in little more than one human generation. Nearly thirty years ago, the roentgen ray was made immeasurably valuable in the study of urogenital lesions by the successful practice of pyelography, while prior to that time some of the most spectacular films or plates for public and professional demonstration of the virtues and possibilities of the x-rays were those depicting images of stone in the urinary tract.

Lower and Nichols¹ state that perhaps in no other field of medicine and surgery has the roentgenogram been of more signal value than in the diagnosis of diseases of the urinary tract but that nevertheless it is absolutely essential for the clinical diagnosis and the roentgen examination to be considered together in any given case. As pointed out by Young and Waters,² the work of the cystoscopist was expanded greatly following the regular adoption of pyelographic technic. So likewise an added burden was placed on the roentgenologist, who was forced to learn much of the intimacies of urology in order to be of the greatest assistance possible in the interpretation of plates. The enormous amount of clinical material evaluated by Braasch³ in the compilation and revision of his work, together with atlases published in conjunction with case histories by the authors already mentioned and others has proved of equal and inestimable value to the cystoscopist and the roentgenologist.⁴ The common practice of publishing roentgenographic prints in textbooks on urology and in many articles on urologic subjects has provided a further wealth of material for all observers.

Since medical progress breeds dissatisfaction with methods at hand, the early solutions for use in filling the lumens of the urinary tract to produce radiopacity have been discarded in favor of several which are less expensive, less toxic and less irritative allowing better images, and which at present seem to answer all requirements for perfect retrograde mediums. It is interesting that the most acceptable medium today is one of those used for intravenous urography. There have been healthy improvements therefore, in the method of retrograde urography, another being the frequent use of some pyeloscopic routine. One obvious difference exists in the application of the two methods. Cystoscopic technic and skill are required for one while any

one having access to an x-ray machine can practice the other after a fashion. Therein lies a real danger in intravenous urography, and one aspect of it is the procrastination in serious illness, bred of faulty interpretations.

The development of intravenous urography has again increased the scope of work on the part of both the urologist and the roentgenologist. Taking advantage of urine secretion and adapting urine-bearing drugs to delineate the lumens of the urinary tract, a number of scientists have provided this ingenious method for physiologic investigation and diagnostic study so that now, by dint of research and painstaking application, intravenous urography has been accorded an established role in medical diagnosis. For a time, however it threatened the older method used for roentgenographic study of the kidney and ureter, retrograde urography. Its usurpation was like that of a new toy, and its use rather indiscriminate, it is still depended on by many workers to a degree that we think is absolutely unwarranted.

Without the distinct advantages of the intravenous method, the true motor physiology of the urinary tract cannot be investigated and even in its present high state of efficiency it leaves much to be desired. The ideal



Fig. 1 (case 1)—Subacute right pyelonephritis. Preliminary intravenous urography not productive of any information. Retrograde urography with catheterization of ureters and with catheter in lower pelvis of double kidney (right) readily demonstrated entire anatomic situation.

medium will be one which will so completely and suddenly suffuse the urine that pyeloscopic and serial roentgenographic studies may be regularly made and repeated on individual subjects, with certainty as to clear and complete delineation of the entire lumen including the minor renal calices and the full extent of the ureters. It is impossible to relate the experiences of those who have published hundreds of articles on the subject of intravenous urography in our own and the foreign literature. All are familiar with the valuable investigations made with the Jarre Cix camera and it has been a great privilege to collaborate with Jarre in all his urographic studies. An excellent summary dealing with the general aspects of intravenous urog-

Read before the Section on Radiology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1935.

¹ Lower, W. E. and Nichols, B. H. *Roentgenographic Studies of the Urinary System*. St. Louis: C. V. Mosby Company, 1933.

² Young, H. H. and Waters, C. A. *Urological Roentgenology*. New York: Paul B. Hoeber, Inc., 1928.

³ Braasch, W. F. *Pyelography*. Philadelphia: W. B. Saunders Company, 1928.

⁴ Roche, A. E. *Pyelography*. New York: William Wood & Co., 1929. Woodruff, S. R. *Urographic Urology*. New York: Wainick Printing Company, 1931.

⁵ Cumming, R. E. *Urography*. *J. Urol.* 24: 587 (Dec.) 1930. Physiologic Data upon Renal and Ureteral Function. *ibid.* 25: 613 (June) 1931.

raphy and prepared by one of the pioneer workers in the field is that by Swick.⁶

One may safely predict that the final perfection of mediums for intravenous administration will allow complete visualization of all normal lumens of the urinary tract, thus enabling a final evaluation of physiology in its bearing on the normal movement of the urinary

clinical cases. The accompanying tables contain an accurate summing up of the personal opinions of a great many outstanding men. While the majority of these are urologists, a considerable list of roentgenologists appears in our file of answered questionnaires and a survey of the opinions of a number of pathologists made as a separate investigation has furnished the background for conclusions representative of the three groups mentioned.

The inaccuracies current in the practice of retrograde urography are well known, especially to experienced clinicians who are best able, on the other hand, to interpret the many variations in roentgenograms obtained by the intravenous method. Some roentgenologists seem

TABLE 1—Estimated Cases with Intravenous Method

Estimated number of cases (intravenous method)	1820	
	Number	Per Cent
Experience limited (up to 100 cases)	30	20
More extensive (up to 400 cases)	94	50
Extensive (up to 1000 cases)	25	15
Very extensive (up to 5000 cases)	9	5
No answer	3	2
Total	161	100

willing to attempt a complete diagnosis of disorders of the urinary tract without the counsel of a clinician. With the two methods of urography in constant and indiscriminate use, it is more than ever necessary to establish a proper alliance between roentgenologists and clinical urologists. The correct balance allows primary choice of either method with a willingness to seek confirmation by means of the other. Many individual problems can be solved by one method, in some situations only one can be used. Taking advantage of both



Fig. 2 (case 2)—Bilateral pyelonephritis, bilateral ureteritis and bilateral ureteroceles. It was impossible to catheterize the ureters on three occasions, one with spinal anesthesia. With the catheter in the left ureteral orifice an attempt was made to obtain a ureteropyelogram. Intravenous urography readily produced images showing the entire renal pelvis, ureters and bladder. Note also peculiar deformity of bladder due to ureteroceles.

stream. Such mediums will not be universally diagnostic, however, since deviations in renal and ureteral motor function must of necessity be expected to interfere with proper filling of the lumens. Total or radical renal failure likewise will continue to allow instances of incomplete image production or entire lack of opaque shadows. Perhaps the correct dictum for the present is to the effect that the more normal the kidney and ureter, the less complete are the images obtained, barring radical dysfunction. This statement will not be accepted by many, yet we are convinced that it is true. The very fact that some men adopt special methods for preparation of patients and added details in the progress of an investigation, such as the regular use of low abdominal compression, while others strictly avoid preparation and assert that only one exposure is regularly necessary for a diagnosis, eliminating even a plain preliminary film, points to a wide variation in opinion and proves the continued transition in progress as regards the actual practice of the intravenous method.

It is our purpose to compile an up-to-date estimate of the value of intravenous urography, making comparisons with the well established method of cystoscopic (retrograde) urography and treating the subject from the standpoint of three groups, namely, roentgenologists, urologists and pathologists. To that end we prepared a questionnaire which was mailed to more than 350 active physicians. We are indebted to them for their excellent cooperation in their returns, which we are sure provide a fair cross-section of belief and experience based on the study of many thousands of

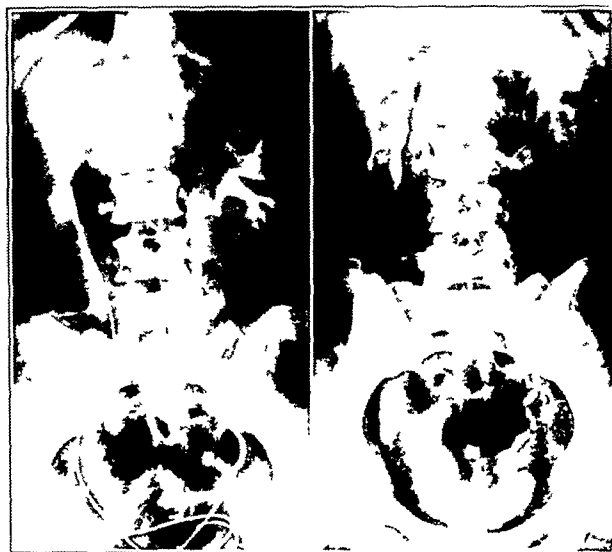


Fig. 3 (case 3)—Left ureteroceles with abnormal placement of ureteral orifice and ureteritis in ureter leading to upper pelvis of a double kidney. Repeated cystoscopy and retrograde urography failed to disclose entire pathologic condition but provided an excellent study of the lower pelvis on the left side. Intravenous urography gave an excellent demonstration of the upper pelvis and the entire ureter, therefrom demonstrating very clearly the dilatation and anomalous position of its lower segment.

and adding the regular practice of multiple or serial exposures at carefully chosen intervals, one may obtain maximum information. Well known dangers of retrograde urography, which formerly were ignored or accepted as unavoidable, are now largely eliminated, so

6. Swick, M. C., *Excretion Urography in Oxford Urologic Surgery*, New York, Oxford University Press, 1933, volume 1.

7. (a) Swick, (b) Weson, M. B., *Intravenous Urography for the General Practitioner*, South M. J. 28, 16 (Jan.) 19.

that justifiable fears as to potential renal damage and extension of infection no longer exist. We have found no evidence of alarm or of serious consequences verified by pathologists, in connection with the use of the various mediums now employed. Elements of danger present in intravenous urography, which still cannot be ignored, will appear in the tables and will bear close scrutiny.

The variety of answers that our questionnaire has evoked makes one waver between the adoption of intravenous urography to the exclusion of the retrograde method and a wholesale condemnation of the intravenous method and regular use of retrograde urography. This great divergence in opinion shows a need for more uniformity in technic with regard to both methods, and a more consistent pooling of information on an unbiased level. We would hate to be deprived of either method in our own practice and are illustrating our need for both in the accompanying illustrations. Our own experiences in purely clinical practice also are at variance with those of much better observers. For instance in renal tuberculosis we have rarely found it possible to obtain satisfactory roentgenologic evidence

TABLE 2—Comparative Use of Two Methods of Urography

Intravenous Urography		
1-5%	7	4%
5-25%	93	58%
25-50%	29	18%
50-75%	11	7%
75-100%	15	9%
No answer	7	4%
Total	164	100%
Retrograde Urography		
0-25%	7	4%
25-50%	20	12%
50-75%	32	20%
75-100%	93	57%
No answer	12	7%
Total	164	100%

TABLE 3—Percentage of Instances in Which Intravenous Urography Provides Positive Diagnosis and Confirmatory Diagnosis

	Positive Diagnosis		Confirmatory Diagnosis	
1-5%	12	7%	0	
6-15%	60	38%	37	23%
16-30%	26	17%	23	17%
31-45%	12	7%	8	5%
46-60%	17	10%	19	11%
61-75%	7	4%	10	6%
76-90%	12	7%	24	16%
91-100%	0		4	2%
Never	9	5%	4	2%
No answer	9	5%	23	17%
Occasional or doubtful	0		4	2%
Totals	164	100%	164	100%

with the intravenous method. In early lesions the information is not definite the finer changes not being brought out in the images on any of a long series of films while in an advanced process there has rarely been sufficient delineation for any interpretation. Likewise, in the instances of large hydronephrotic kidneys the images obtained by the use of various intravenous mediums have nearly always been incomplete. So, in the two types of disease mentioned one must have

recourse to retrograde studies. Cabot,⁹ however, states that the pathologic changes found at operation or post mortem are usually very accurately promised by previous intravenous studies. Many writers have stressed the value (as have several in the questionnaire reports) of intravenous urography in the two specific pathologic conditions named.

Since the discrepancies mentioned exist in the minds of those in daily contact with urologic diagnosis, is it

TABLE 4—Major Advantages and Indications of Intravenous Urography

1 Bilateral function dynamic and anatomic study
2 Informative studies in
(a) Injuries to kidneys ureters bladder, urethra
(b) Calculosis
(c) Nephroposis
(d) Perirenal abscess
(e) Congenital defects and anomalies
(f) Obstructive lesions (at any situation)
(g) Ureteral transplants
(h) Differential diagnosis from abdominal conditions
(i) Urinary tract tuberculosis
(j) Hydronephrosis
(k) Pyelonephritis of pregnancy
3 Avoidance of cystoscopy because of
(a) Difficulty or inability to do cystoscopy (urethral or ureteral obstructions)
(b) Pain
(c) Severe infection
4 Routine studies in prostatic hypertrophy
5 Children

TABLE 5—Minor Advantages and Indications of Intravenous Urography

1 Preliminary study to cystoscopy
2 Comparative simplicity in technic (but more difficult of diagnosis)
3 Kidney outlines enhanced
4 Avoidance of deformities due to spasm or excessive pressure
5 Less expensive (but will be more so if cystoscopy is necessary)
6 Avoidance of hospitalization as a rule
7 In neurotics or those who refuse cystoscopy
8 Pulmonary tuberculosis
9 Supplemental or confirmatory information
10 Follow up studies (medical or postoperative)

not dangerous to announce to the general medical public that intravenous urography has brought back to general practitioners a large element of their practice, so that, presumably without help from either urologist or roentgenologist, they may now make a proper diagnosis on most patients with kidney disease?^{7b}

The questionnaire with which this presentation is concerned was prepared in order to obtain as accurately as possible the opinions of those most qualified to pass on the comparative values of intravenous and retrograde urography. Obviously, it was not practical to send copies to all the eminent urologists, even those in America, nor to many roentgenologists who, by reason of the volume of their work or a peculiar interest, might well be expected to have valuable data available. The tables were prepared after a most painstaking study of the questionnaires returned. Of the 350 questionnaires distributed, replies were received from 164, representing answers from between 225 and 235 individual physicians.

Table 2 is arranged to show the percentages of comparative usage of the two methods of urography, while table 3 depicts the percentage of instances in which intravenous urography affords (a) a positive diagnosis and (b) a confirmatory diagnosis.

8 Cumming R E Intravenous Urography Radiology 18 41 (Jan) 1932

9 Reply to questionnaire

In table 4 are listed the advantages of intravenous urography and its major indications, in table 5 its minor advantages and indications

Table 6 provides a composite opinion of the disadvantages of intravenous urography and indirectly points out the comparative increased value in those procedures which accompany retrograde urography

In table 7 are listed the definitely recognized contraindications to intravenous urography. Here again one must keep in mind that the retrograde method has certain dangers which might even be listed as contraindications

In connection with the collected data relative to low renal function, a number of men have reported using excretory (intravenous) urography in cases presenting a total nonprotein figure of 250 mg or more, without ill effects. Relative to hyperthyroid states, two cases presenting symptoms exaggerated by intravenous mediums were reported. Since the iodine in both neopax and diodrast is so rapidly eliminated in ordinary situations, this complication seems open to doubt, although so-called iodism may play a role in such cases. Reference to a presumed danger in intravenous urography, in cases of pulmonary tuberculosis, is made in table 7, since it was mentioned in a great many questionnaires. However, some men who are using intravenous urography in large tuberculosis sanatoriums have reported that there is no contraindication, per se, provided by this disease

TABLE 6—Major and Minor Disadvantages of Intravenous Urography

Major Disadvantages	
1 Insufficient diagnostic information due to	
(a) Insufficient filling of calices or pelvis	
(b) Too rapid elimination	
(c) Complete absence of shadow with normal kidney	
(d) Incomplete information about ureters bladder	
2 No cultural information	
3 Intestinal flatus may give misleading films	
4 Lack of detail in obese individuals	
5 Greater experience needed for interpretation	
Minor Disadvantages	
1 Technical difficulties (poor veins and other conditions)	
2 Used indiscriminately or by incompetent men	
3 Expensive if retrograde urograms are necessary	

TABLE 7—Contraindications to Intravenous Urography

1 Renal	2 Cardiovascular
(a) Low renal function	(a) Coronary disease
(b) Nephritis	(b) Advanced myocarditis
(c) High nitrogen retention	(c) Decompensated heart conditions
(d) Nephrosclerosis	
(e) Nephrosis	
3 Liver	4 Miscellaneous
(a) Liver insufficiency	(a) Hyperthyroidism
(b) Cirrhosis	(b) Pulmonary tuberculosis
	(c) Allergic states
	(d) Hyperpyrexia

Table 8 lists the fatal complications to intravenous urography. It is difficult to link up the use of any of the standard mediums used with some of the fatalities mentioned, particularly in view of the time elapsing after the x-ray studies were made.

The common reactions to the newer preparations in use for intravenous urography are shown in table 9.

A few more or less technical points which we had hoped would be discussed by those who so obligingly replied to the questionnaires, but which appeared to elicit little interest, include the adaptation of pyeloscopy

to urography in general. When mentioned in connection with intravenous urography, it was stated that the images obtained were insufficiently clear and dense to allow good visualization for fluoroscopic study. This is the fact as regards work with the fluoroscopic screen which is attached to our Ci-nex camera, and one of our requirements for advanced studies in motor physiology is a medium which will provide this as yet unaccomplished detail. Another point is that of lateral exposures—it is our belief that much of value can be

TABLE 8—Fatal Reactions

Author	Number of Cases	Comment
A Ravich	1	Chronic nephrosclerosis three days after use of iopax
C McDewitt	1	Woman aged 59 polycystic kidneys 6 days anuria no visualization
N Moore	1	Cardiovascular collapse 4 years after intravenous iopax
W. Kearns	1	Infant aged 8 months cause not stated
E Belt	1	Frail elderly woman in poor condition unilateral renal tuberculosis immediate autopsy failed to reveal cause

TABLE 9—Common Reactions to Newer Preparations

(No reactions reported 109—66% of 164)	
1 Allergic	
(a) Urticarial (20)	(e) Lacrimation (3)
(b) Rhinitis (5)	(f) Iodism (3)
(c) Edema of glottis (5)	(g) Nitritoid (2)
(d) Unspecified (5)	(h) Salivation (1)
2 Thrombosis (0.8% in 5 000 cases—Brasch)	
3 Pain (8)	
4 Nausea and vomiting (7)	
5 Cellulitis (3)	
6 Syncope shock collapse (7)	
7 Temporary anuria (2)	
8 Nervous reactions (2)	

obtained by including one or more films exposed in a lateral or semioblique position in routine studies on the upper urinary tract. This was stressed recently by Mertz.¹⁰ One observer (H W Howard⁹) states that a lateral film taken with the suspected kidney the more distant from the film provides excellent data on kidney rotation and ptosis.

In order to provide ample illustrations of the comparative values of intravenous urography and retrograde urography, and particularly in order to illustrate the real need for both methods, the accompanying reproductions of roentgenograms are offered for inspection. In the first instance, a working diagnosis was impossible with intravenous urography, while a retrograde study readily gave a complete anatomic diagnosis. In the second instance, just the reverse was true, while in the third, both methods had to be resorted to for accurate diagnosis.

CONCLUSIONS

1 Many of the inaccuracies of both intravenous and retrograde urography are well known, and the correct balance is purely an individual problem, one must take advantage of both methods and use serial or multiple exposures at carefully chosen intervals to obtain maximum information.

2 One must be constantly reminded of the close harmony necessary between those working in the field of roentgenology and those who practice urology. Not only a mutual knowledge of an entire given clinical

¹⁰ Mertz H O and Hamer H G The Lateral Pyelogram J Urol 31 23 (Jan) 1934

picture but also joint study of diagnostic indications, especially those afforded by urographic investigations, are important to both groups for the ultimate in diagnosis.

3 Our opinion is that intravenous urography has a definite role in the investigation of the urinary tract, although it is quite probable that the ideal medium and technic are still to be worked out.

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ABSTRACT OF DISCUSSION

DR MOSES SWICK New York Like other methods in medicine, excretion urography is not without its limitations. Even cystoscopy and retrograde pyelography, despite their years of existence, still have their defects. Excretion urography cannot supplant cystoscopy, retrograde pyelography and ureteral catheterization. However, one should concede that excretion urography has simplified urologic diagnosis and has eliminated to a certain extent retrograde pyelography, particularly when viewed in conjunction with the history and the physical and laboratory observations. It is simpler and less taxing to subject a patient to an intravenous urographic examination first. When corroborative or supplementary evidence is indicated or when the results are equivocal, cystoscopy or retrograde pyelography can be carried out. Excretion urography has been of considerable help in the presence of obstructive lesions of congenital origin or of lesions either obstructive or infectious superimposed on congenitally anomalous conditions under which circumstances retrograde pyelography may be mechanically impossible or dangerous. As a result, congenital anomalies are being recognized clinically with greater frequency. Children, in whom pyuria has usually been attributed to pyelitis, have been found to be suffering from infections superimposed on congenital lesions, particularly the infected congenital hydronephroses. Concerning the latter, it is important to bear in mind that despite comparatively little intact renal tissue, good visualization may often be encountered and that therefore intense roentgenologic shadows are no quantitative criterion nor one for determining the type of therapeutic procedure. The latter will depend on the functional-anatomic status of the individual case and on the operative observations. Again, in nonfunctioning hydronephrosis, the mere nonvisualization of a conducting system incidental to the functional-anatomic derangement of the kidney parenchyma is in itself of great assistance as a means of localization and of diagnosis when considered together with the other clinical data. Excretion urography is well adapted to cases presenting obscure abdominal symptoms and conditions in which one is adverse or hesitates to subject a patient to the retrograde route of investigation. For example, the differentiation of abdominal masses, whether of intra-urinary or extra-urinary origin, has been frequently facilitated by this method of approach. In this fashion, the diagnosis of congenital solitary kidney, ectopic fused kidney and dystopia of the kidney have been most important to the internist, surgeon and urologist. Excretion urography and retrograde pyelography should supplement rather than vie with each other as to superiority.

DR ROBERT E. CUMMING Detroit Roentgenograms that depict both sides of a comparative study and represent investigations made on three consecutive patients seen during recent weeks supply a fair means of indicating the necessity of using both methods of urography in urologic diagnosis. I think it is dangerous for Dr Swick or any of us to select slides that may show wonderful results with one or the other of the two methods without establishing the value of the two. I believe that in most of Dr Swick's cases a diagnosis might have been made readily and safely by means of retrograde pyelography. In the three cases mentioned, both methods of making urograms were necessary to complete a diagnosis in one instance and each method failed once and was successful once. When a questionnaire is returned by an excellent roentgenologist with the statement 'I have never been able to make a diagnosis with the intravenous urographic method and another sent back by a prominent urologist includes the statement 'I have seen a

number of normal kidneys removed with a diagnosis of tumor made from intravenous urographic study, and when numerous other correspondents advance opposing ideas on various phases of urography and the two methods under consideration, the timeliness of the discussion is most apparent.

HYSTEROGRAPHY AS AN AID IN THE DIAGNOSIS OF ABDOMINAL PREGNANCY

REPORT OF A CASE

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There appear to be in the literature reports of only seven cases in which the injection of iodized oil into the uterine cavity was employed for the purpose of verifying a diagnosis of abdominal pregnancy. The first one to use hystero-graphy for this purpose was Bermann¹ in 1925. The others who employed this procedure were Gabaston and Harguindeguy,² Mendenhall,³ Couvelaire, Portes and Dignonnet,⁴ Osborn⁵ and Nolle.⁶ It is true that such gestations are not often encountered and even when present are frequently not suspected. However, when a diagnosis of abdominal pregnancy seems to be the correct one, injection of iodized oil into the uterus is not only a simple and relatively harmless procedure but presents absolute evidence of the presence of a pregnancy outside the uterine cavity. A roentgenogram taken of an abdominal pregnancy without previous injection of an opaque substance into the uterus frequently shows a dead or a live fetus in an abnormal location but it does not prove that the fetus is outside the uterus. A comparison of figure 1 and figure 2 will demonstrate this point.

When a roentgenogram shows a fetus that has a collapsed skull and/or other evidences of fetal death and there is a suspicion of extra-uterine pregnancy, there is surely no harm in injecting iodized oil into the uterine cavity to decide whether or not the fetus is inside or outside the uterus. Likewise in cases in which a fetus is dead and repeated attempts to induce labor by medicinal and mechanical means, such as the introduction of gauze, and bougies fail to bring about expulsion of the child, it is advisable to perform hystero-graphy. Occasionally one may be surprised to find an abdominal gestation. However, if the child is alive, together with doubt in the diagnosis, it might be dangerous to inject solutions into the uterus.

REPORT OF CASE

Mrs. J. D. was referred to me by Dr. J. B. De Lee with a diagnosis of mature dead fetus outside the uterine cavity. He recommended that a study of the case be made by means of iodized oil. The patient was 31 years old and had a living child 3 years of age. Her last menstrual period had begun on May 13, 1934. On July 14 she experienced the sudden onset of severe cramp-like pains in the lower part of the abdomen while attending a funeral. In spite of the pain she walked one and a half blocks to her home. The pain persisted and a physician was called who administered a hypodermic to relieve the pain. There was no vaginal bleeding at this time.

- 1 Bermann quoted by Gabaston and Harguindeguy.²
- 2 Gabaston, J. A. and Harguindeguy, E. *Semana med.* 35 177 (May 17) 1928.
- 3 Mendenhall, A. M. *J. Indiana M. A.* 22 349 (Sept.) 1929.
- 4 Couvelaire, Portes and Dignonnet. *Bull. Soc. d'obst. et de gynec.* 19 34 (May) 1930.
- 5 Osborn, G. R. *Am. J. Obst. & Gynec.* 20 98 (July) 1930.
- 6 Nolle, H. *Zentralbl. f. Gynak.* 57 683 (March 25) 1933.

However, a few days later there was a slight bloody vaginal discharge and following this there was mild bleeding for a few days every month. During August and September 1934 the patient had severe backache and she vomited considerably. During November and December she had severe pain in the right hip. In December she had albuminuria, hypertension and edema of the hands and feet and in December and January she complained bitterly of "gas pains." She observed that the baby was considerably more active than the one in the previous pregnancy had been.

Labor pains set in on Jan. 14, 1935, and the baby ceased its activity at this time. The patient remained in bed for three days. She was given a number of hypodermics but the baby was not born. The physician in charge could not hear the baby's heart tones after January 14. Nothing was done following the three days of "labor pains." On February 22 the patient had vaginal bleeding which was associated with the expulsion of large clots. There was however no pain at this time. In March the abdomen was appreciably harder and smaller. On March 26 the patient bled for three days just as though she were not pregnant. On April 9 a roentgenogram showed a dead fetus, hence the physician gave the patient castor oil and quinine in an effort to induce labor. On the three successive days gauze was inserted into the uterus and pituitary substance was given for the same purpose. These measures proved ineffective. The patient menstruated normally in May and in June.

I saw the patient June 22 at which time she was in excellent health. Her general physical examination was negative and the laboratory examination gave normal results. Abdominal examination revealed a large, hard, smooth, somewhat nodular

right of it. The latter mass we believed to be the uterus. The irregular mass in front of and to the left of the uterus was considered to be part of the fetal sac containing the dead baby.

An Aschheim-Zondek test proved to be negative. Stereoscopic roentgenograms showed a dead fetus on the left side of the abdomen (fig. 1). On June 24 I injected iodized oil into the uterus and obtained the plate shown in figure 2. As may readily be seen, the uterus is of normal size and both fallopian tubes



Fig. 1—Appearance without preliminary injection of iodized oil. The fetus lies on one side of the abdomen. The collapsed skull is in the pelvic cavity near the midline. This roentgenogram does not definitely exclude an intra uterine gestation.

mass which extended up above the umbilicus in the midline but was much higher up on the left side and in the left flank. No fetal parts could be outlined and no fetal heart sounds could be heard. Vaginal examination revealed a marital outlet and a smooth hard closed cervix. In the anterior culdesac was a mass which was soft and irregular in outline and extended up toward the left side. It appeared to be attached to a small hard smooth mass which lay posteriorly and to the



Fig. 2—After the injection of iodized oil. The uterine cavity and both fallopian tubes are readily seen. The fetus occupies exactly the same position as in figure 1 but this picture shows definitely that the fetus is outside the uterus.

are elongated. The right tube passes backward and then curves forward over a rounded soft tissue shadow, which rises to the level of the fourth lumbar vertebra. (At operation this soft tissue was found to be the placenta.) The left tube passes behind the compressed fetal head and oil has collected in large drops apparently in a fluid-containing cavity in the end of the tube. The dead fetus is easy to outline on the left side. The collapsed skull is low down in the pelvis on the left side. There is no doubt whatever that the fetus is outside the uterine cavity.

It was decided to operate but before doing so, two donors were secured for blood transfusion, should this be necessary. Much trouble was not anticipated, however, because the baby had been dead for five and a half months and it was assumed that the blood vessels in the placental attachment were completely thrombosed. On June 26 thirteen and a half months after the last menstrual period I operated on the patient. On opening the abdominal cavity I found the omentum completely covering a large, round necrotic looking mass. The omentum was freed from the mass. Palpation revealed that the mass not only filled the entire lower part of the abdomen but extended about 10 cm. above the umbilicus and well up into the left flank. The left part of the mass contained most of the fetus. The part low down in the midline contained the placenta and the collapsed fetal skull. There were no adhesions between the mass and any abdominal organs except the omentum. The lower pole of the mass was slightly adherent to the uterus which lay deep in the pelvis behind the fetal sac and over to the right side. The fetus, which was partly macerated was easily delivered from its sac. The child was a female and presented deformities of the arms and legs resulting from pressure

effects Examination of the patient's pelvic organs revealed that the left ovary was normal but that the left tube was congested, elongated, markedly dilated and firmly adherent to the pelvic wall on the left side The right tube was also enormously elongated and coursed over the entire anterior surface of the fetal sac While the right tube was in contiguity with the sac, it was separated from the latter by the thick wall of the sac The fetal sac lay entirely on the left side The placenta was found at the lower pole of the sac and this was slightly adherent to the uterus The right ovary could not be found anywhere Both broad ligaments were entirely normal The fetal sac and placenta were easily separated from the uterus, which was normal in every respect The right fallopian tube was removed with the mass as was also a portion of the right broad ligament, to see whether there was any ovarian tissue present in it The uterus and left tube and ovary were left in situ The abdomen was closed as usual Because of the absence of any technical difficulties the blood lost during the operation was insignificant The patient made an uneventful recovery and went home twelve days after the operation She returned



Fig 3—Deformed macerated fetus umbilical cord placenta and fetal sac

for an examination on Aug 16, 1935 She was feeling perfectly well and bimanual examination showed a normal uterus and an apparently normal left tube and ovary The right fornix was clear A normal menstrual period had occurred on July 18

COMMENT

The fetus, sac and placenta are shown in figure 3 The only possible origins for the abdominal pregnancy in this case are as follows 1 The pregnancy may have been an intra-uterine one and early in gestation the uterus ruptured and the ovum continued to grow in the peritoneal cavity after its expulsion This is hardly likely as judged from the patient's past history, the normal uterus seen on the roentgenogram and at the time of operation, and the absence of adhesions 2 The second possibility is that the patient had a tubal pregnancy, probably near the ampulla, and the ovum was extruded into the free peritoneal cavity, where it continued its development This possibility cannot be ruled out in this case even though both tubes appeared normal except for their size and course However, the absence of firm adhesions may speak against a tubal

origin 3 The third possibility is an ovarian pregnancy The diagnosis of ovarian pregnancy is favored because of the following facts

(a) The uterus was entirely normal both on the x-ray plates and on inspection and palpation at the time of operation There were no scars on it and the only adhesions to it were of the fetal sac, which were slight

(b) Both fallopian tubes were intact for their entire length, which was even greater than normal

(c) Both broad ligaments were entirely normal

(d) A careful search at the time of operation failed to reveal the right ovary

(e) The pregnancy mass was almost entirely free of adhesions, and the few adhesions that were present were very mild In advanced tubal gestations there are usually many adhesions and the placental attachment is often an extensive one Tumors that do not have a peritoneal covering nearly always become adherent to one or more structures in the abdomen The only organs in the pelvic cavity that have no peritoneal covering and still remain free from adhesions are the ovaries Since the tumor mass in the present case was smooth all the way round and almost entirely devoid of adhesions, this may be a point in favor of an intra-ovarian pregnancy

(f) The right fallopian tube coursed over and in front of the fetal sac In nearly all cases of large ovarian tumors, especially cystic ones, the fallopian tube assumes such a course As the ovarian tumor grows the tube elongates, and this occurred in the present case

(g) Microscopic study of numerous blocks of our specimen did not yield sufficiently clear-cut pictures to make a definite diagnosis, probably because the fetus had been dead for five and a half months and the tissue had degenerated However, in one block there was a layer of cellular tissue that resembled ovarian cortex and adjoining it was definite chorionic tissues

SUMMARY

A case of abdominal pregnancy, probably ovarian in origin, is reported not because of the rarity of such gestations but to emphasize that a diagnosis of abdominal pregnancy can be made with certainty by injecting iodized oil into the uterine cavity I believe this procedure should be employed in every case in which the diagnosis of abdominal pregnancy is strongly suspected, especially if clinical signs and x-ray plates show that the baby is dead In the presence of a dead baby this procedure is practically harmless

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Progress and the Experimental Method—In all ages the implicit belief in orthodox theory or in authority has been the greatest bar to scientific progress What chance was there of learning anything about the etiology of disease when every one believed for nearly a thousand years that disease was caused by some chance alteration in the admixture of four humors that no one had ever seen or demonstrated experimentally Galen was a very great man, but medicine would not have gone backward for a thousand years had it not been for the slavish worship of his authority Galen himself was an experimentalist His followers swallowed his books whole and until the time of Vesalius considered it heretical to even question his anatomy in spite of the fact that Galen never dissected a human body Progress in scientific medicine has depended almost exclusively upon the experimental method Hypotheses or theories are only useful when they lead to experiments to test their validity They are an impediment when they are accepted without such experimental validation and become orthodox beliefs—Vedder, E B The Development of Tropical Medicine *Am J Trop Med* 16 1 (Jan) 1936

A FUNDAMENTAL, RECIPROCAL RELATIONSHIP BETWEEN MYELOID AND LYMPHOID TISSUES

ITS RECOGNITION, NATURE AND IMPORTANCE AS REVEALED BY EXPERIMENTAL AND CLINICAL STUDIES

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AND

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Progress in the solution of the problems of disease in man must depend to a considerable degree on fundamental progress in the recognition and interpretation of alterations in disturbed physiologic equilibria. It may be true that physiology "has its own problems, great in number and enormous in complexity, and those of disease are not among them".¹ Nevertheless, experience has established that the origin and explanation of many abnormal states may be traced to deranged physiologic processes and more particularly to disturbed physiologic equilibria. Granted that this is beyond the scope of pure physiologic research, the recognition of states of physiologic imbalance and of pathologic alterations produced in the tissues by this imbalance then becomes an important concern of the clinical investigator. That this "borderline" territory between physiology and medicine has proved a very fruitful field for clinical investigation, in one direction at least, is quite apparent when one reviews the important progress that has been made in the diseases characterized by disturbances in the functional equilibria of the endocrine glands. It is clear that this field of physiologic disequilibria, occupying as it does a middle ground between medicine and physiology is in real danger of neglect, although it is potentially very important in the search for and the explanation of the mechanism of disease.

It is our purpose in this paper to bring together and to organize a number of observations both experimental and clinical, which have been accumulated in recent years in our laboratory from a widely divergent series of investigations and which when taken together, constitute a body of fact pointing strongly toward the existence of a fundamental physiologic reciprocal relationship between myeloid and lymphoid tissues. The importance of this concept to certain clinical blood dyscrasias will be emphasized.

EXPERIMENTALLY INDUCED IMBALANCE OF THE CELLS IN THE CIRCULATING BLOOD

For a number of years we have been investigating the fundamental cellular reactions occurring in bone marrow and in the lymphatic tissues not only in the course of natural disease but also, more particularly, as these tissues have been brought individually under the influence of substances that have a specific stimulatory effect on them. The demonstrated effectiveness

of nucleic acid derivatives in promoting myelopoiesis,² and of native proteins in inducing lymphopoiesis³ each specific for the tissue designated has been the subject of repeated communications from this laboratory and requires no further elaboration in this paper. Experience has proved that profound and sustained disturbances in the normal numerical balance between the granulocytes and the lymphocytes of the circulating blood regularly follow the daily intravenous administration of either of these substances in rabbits.

Disturbed Equilibrium Due Primarily to Myeloid Imbalance—In our series of studies of myelopoiesis more than fifty rabbits have been injected intravenously with varying quantities of nucleic acid derivatives. Rabbit 0-81, one representative of this group, received sodium nucleate daily over a period of four months. Starting with 50 mg the quantity was periodically increased until during the final month of the experiment 1 Gm of nucleate in 10 cc of sterile physiologic solution of sodium chloride was given intravenously each day (fig 1). During the period of base line control counts, Dec 10 to 23 1930 it will be observed from figure 1 that the lymphocytes fluctuated between 4,000 and 5,800 per cubic millimeter of blood and that the neutrophilic granulocytes ranged between 900 and 2,000 per cubic millimeter of blood. Beginning with the sodium nucleate injections, however, the granulocytes rose promptly and steadily during the first month, Dec 23, 1930 to Jan 21 1931, but in addition there was a precipitous reciprocal fall in the lymphocytes. From January 21 to March 17 the neutrophilic leukocytes equilibrated on a plateau at an average of 6,000 cells per cubic millimeter of blood, during which time there were marked fluctuations in the total lymphocytes, the latter breaking through from the low point of 600 cells per cubic millimeter to temporarily higher levels, particularly on February 5 and 19. Although the granulocytes were pushed to still higher levels during the last month under the influence of daily 1 Gm doses of sodium nucleate the lymphocytes stabilized at an average value of 3,000 cells per cubic millimeter, or at about 70 per cent of the preinjection level.

An autopsy was performed on this animal April 15, after termination of the experiment, by lethal injection of air.

The microscopic examination of these two tissue systems confirmed the gross appearances. The bone marrows were found without exception to be definitely hyperplastic the hyperplasia being confined entirely to the neutrophilic or amphophilic myelocytes. The erythropoietic foci were both relatively and absolutely decreased in size and number. The myeloid hyperplasia was particularly apparent in the spleen and in the kidney,^{3a} the latter organ being an exceedingly rare site for hematopoietic foci. In striking contrast to these tissues, the lymph nodes showed a degree of atrophy never before witnessed in the rabbit. Large acellular spaces filled with tissue fluid were abundant and replaced areas normally very cellular. Cells of the lymphoblastic series were infrequent, those cells remaining being old or degenerating lymphocytes. Some increase in fibroblasts was evident, although no actual scar tissue was found (fig 2).

Artificially induced neutrophilic leukocytosis and myeloid (neutrophilic) hyperplasia under the conditions

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This paper is abbreviated by the omission of certain case data and illustrations. The complete article appears in the authors' reprints.

Read in part before the Twenty Second Annual Meeting of the American Society for Experimental Pathology, Detroit April 10-13 1935 and in part before the Section on Pathology and Physiology at the Eighty Sixth Annual Session of the American Medical Association Atlantic City N J June 14, 1935.

1 Cohn A E. Medicine Science and Art Chicago University of Chicago Press 1931.

2 (a) Doan C A, Zerfas L G, Warren Sylvia and Ames Olivia J. J. Exper Med 47: 403 (March) 1928. (b) Doan C A. Proc Soc Exper Biol & Med 29: 1030 (May) 1932. The Neutropenic State J A M A 99: 194 (July 16) 1932.

3 Wiseman B K. J. Exper Med 53: 499 (April) 1931.

of this experiment are accompanied consistently by a reciprocal lymphopenia and marked lymphoid hypoplasia

Disturbed Equilibrium Due Primarily to Lymphoid Imbalance—Experiments paralleling those just given except that stimulus to the lymphoid structures was induced by the intravenous injection of foreign protein

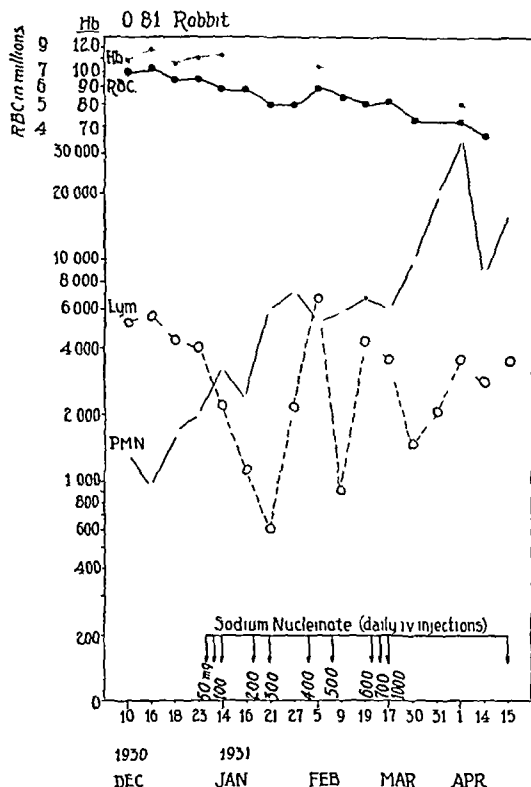


Fig 1—Blood changes in rabbit 081. This animal received intravenous injections of sodium nucleate daily in increasing dosage as shown. Note the rise in granulocytes that occurred with the depression in lymphocytes and red blood cells.

were carried out in a series of rabbits totaling twenty-three. Foreign proteins from various sources were found capable of invoking the response herein detailed but because of ease of preparation and adequacy of supply of fresh material, egg albumin was used as the principal stimulating agent. Typical of the reaction in this group may be cited the blood examinations from animal 0-318 (fig 3). The period prior to March 21 consists of three and one-half months of base line control counts. Beginning March 21, 1934, and daily thereafter this animal received 50 mg of egg albumin in 5 cc of physiologic solution of sodium chloride given intravenously. A study of figure 3 shows that seven days after the first administration of this substance the peripheral level of lymphocytes began to rise and remained constantly elevated throughout the entire course of the experiment. A further study of this chart reveals the fact that the rise in the lymphocytes was accompanied by a sharp reciprocal fall in the neutrophilic granulocytes the latter reaching a low point of only 480 cells per cubic millimeter of blood, April 7, coincident with the period during which the lymphocytes reached their high peak. Following this episode it will be observed that as the foreign protein became less effective in calling forth lymphocytes, probably because of the increasing precipitin titer of the serum against egg white, there was a corresponding partial recovery in the granulocytic levels (April 7 to

16) followed by a definite upturn in the numerical values for this cell type beginning April 20, the granulocytes and lymphocytes attaining a common proportionate representation in the blood ten days later.

Gross examination of the myeloid and lymphatic tissues of this animal as seen at autopsy revealed wide spread changes, which were typical of all the animals in this series. Extreme hypoplasia of the bone marrow was evident in all the long bones, the regressive changes being evidenced by fatty replacement of a large part of the marrow cavities normally rich in myeloid cells. All deposits of lymphatic tissue were grossly enlarged, the popliteal node exceeding the average normal for this animal more than five times by weight. The spleen weighed 24 Gm, as contrasted with the average normal of 0.7 Gm. On cut section the nodes were very cellular, and supravital examination of the scrapings showed a considerable increase over the normal in lymphoblastic cells. The malpighian bodies were prominent and numerous, some of them measuring almost a millimeter in diameter.

Microscopic examination of the bone marrow confirmed the gross appearance. Figure 4 represents a low power view through a typical atrophic area. It will be observed that in these fields there is almost total aplasia. Other areas from the long bones, not visibly altered in the gross, nevertheless showed definitely less blood cell formation than normal. The diminution or absence of megacaryocytes was particularly striking. Microscopic study of the marrow from ribs and sternum failed to show definite changes of any kind. This was not wholly unexpected, as it is the usual experience to find the marrow in these locations the last to be affected and the first to respond in hypoplastic

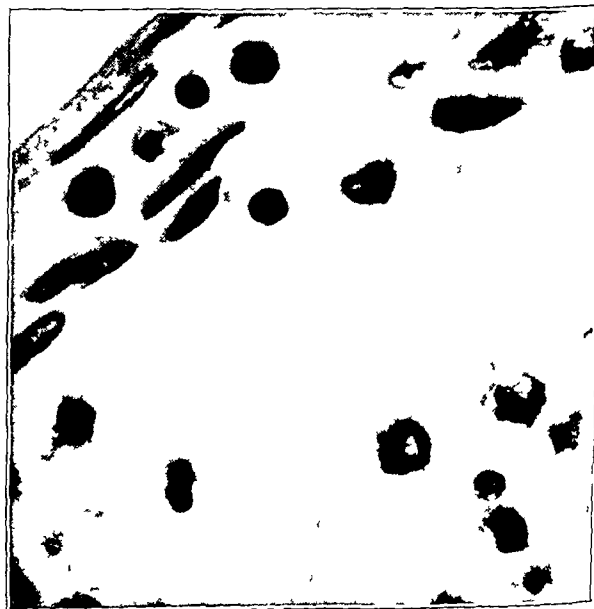


Fig 2—Section through the cortex of a popliteal lymph node from rabbit 081. This animal had received intravenous injections daily for approximately two months of sodium nucleate in increasing dosage of from 0.05 to 1 Gm. Note the absence of cells in this area which normally is very cellular. The absence of young lymphocytes is also a feature. Oil immersion view.

states and recovery was already occurring in this animal at the time of the autopsy.

Microscopic changes of the lymphatic tissues in contrast to the bone marrow showed undoubted hyperplasia. In many of these nodes proliferating lymphoid tissue almost completely filled the medulla of the node.

thus converting this structure into a mass of diffuse lymphatic tissue with obliteration of the normal cortico-medullary architecture. The spleen was especially rich in lymphocytes, neighboring follicles often becoming confluent (plates 1 and 2 in former publication⁵).

The data assembled from this group of animals indicate that experimental stimulation of lymphatic ele-

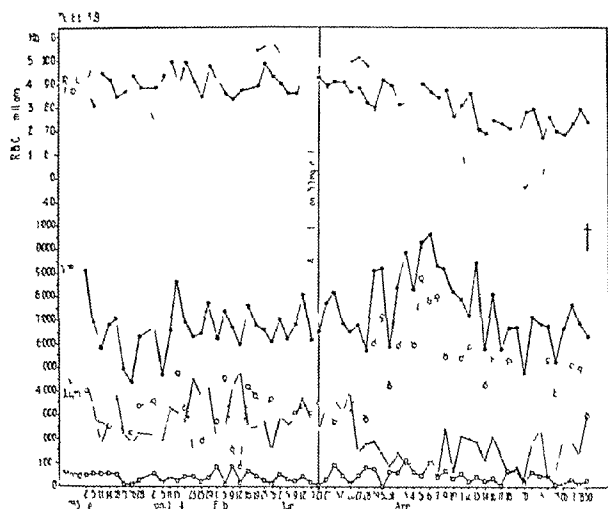


Fig 3—Blood changes in rabbit 0318. This animal received intra venous injections of 50 mg of egg albumin daily for forty one days. Note the depression in granulocytes which occurred simultaneously with the elevation of lymphocytes. The developing anemia is clearly shown. The animal gained weight constantly throughout this experiment.

ments with foreign protein results in a reciprocal reduction in the myeloid elements. It is again apparent that the overgrowth of one type of blood-forming tissue influences adversely the growth of the other. The fact that the monocytes are unaffected during these changes in the myeloid and lymphoid elements attests further to the limited two-way specificity of this reciprocal reaction. It is well known that the monocyte depends neither on the bone marrow nor on the lymphatic tissues for its origin arising in the diffuse connective tissues distributed everywhere in the body.

It would appear, therefore, that there is a constant physiologic balance or reciprocal relationship existing between the myeloid and lymphatic tissues which controls and in turn is reflected by a constantly changing ratio of granulocytes to lymphocytes in the peripheral blood in response to normal and pathologic stimuli. The importance of this fundamental law of reciprocal hemtopoiesis is at once apparent in the interpretation of the blood pictures produced by disease.

CLINICAL STUDIES OF MYELOID AND LYMPHATIC IMBALANCE

Many factors each having a specific and often divergent influence on the blood cells are always present in clinical disease. Fever alone exerts a powerful influence on the blood-forming tissues and has only recently been scientifically appraised⁶. Many other influences not yet studied undoubtedly serve to alter the blood response in disease, so that the demonstration of relatively 'pure' clear-cut reactions such as may be obtained in the experimental laboratory is as a rule not possible in the clinical patient. That is to say the reactors in disease are multiple and often result in cellular responses that tend to becloud an interpretative

dissection of the blood picture. Nevertheless striking examples of the effects which may become manifest in human disease when this physiologic balance between myeloid and lymphoid tissues is impaired have been observed. As may be anticipated, these tissue and blood responses are most clearly defined when the stimulus is somewhat specific for, and limited to, one or the other of the blood-forming tissues.

Infectious Mononucleosis—Infectious mononucleosis affords an excellent example of a disease in which lymphoid hyperplasia is commonly almost the sole pathologic feature present. A study of the blood cells in some thirty-two cases which we have observed shows quite regularly that the high values for the lymphocytes are accompanied by low relative and absolute values for the granulocytes. Figure 5 shows this phenomenon graphically. This patient was first seen about eighteen hours after the clinical onset of symptoms. There was the usual malaise, Vincent's infection of the tonsils, generalized adenopathy and a barely palpable spleen. Following our first observation, Sept 8, 1933 the lymphocytes, already distinctly elevated and showing the characteristic qualitative changes, rose steadily to a maximum of 8,800 cells per cubic millimeter of blood by the 11th. Accompanying this rise in lymphocytes there was a steady decrease in the circulating granulocytes, these cells reaching the very low value of 500 neutrophils per cubic millimeter of blood September 15. Concurrent with the subsequent fall in lymphocytes it will be observed from this chart that the granulocytes rose sharply, reaching the normal value of 4,000 cells at the same time, October 11, that the lymphocytes returned to within their normal level of 3,000 cells per cubic millimeter of blood. Following this there was a further slight rise in the lymphocytes, which was accompanied by a slight drop in the granular cells (October 11 to December 13), and finally a sharp drop

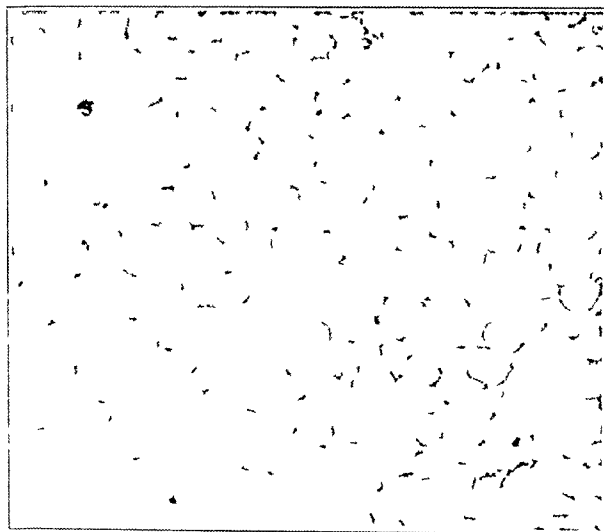


Fig 4—Section through the bone marrow of the femur from rabbit 0318. This animal had received intravenous injections of egg albumin 50 mg daily for forty one days. Absence of myeloid activity and fatty character of this marrow is clearly shown. Low power view.

in the lymphocytes coinciding with an equally sharp rise in the granulocytes. It will be observed that during this entire period there was a slight fall in the red blood cells, most marked when the lymphocytes were highest and leveling off when these cells were near the limits of normal. At the last observation the lymph node, in this individual, were still quite definitely enlarged and

⁵ Wiseman B. K. J. Exper. Med. 54: 271 (Aug.) 1931.
⁶ Hargraves M. M. and Doan C. A. Proc. Fifth Annual Fever Conference Dayton, Ohio, 1935, p. 51.

it will be observed that neither the red cells nor the granular cells had returned quite to normal. This would seem to be best explained, in view of the experimental work cited, by attributing the obvious depression of the bone marrow to the inhibitory effects of the lymphatic tissue.

Hypoplastic Anemia—This is usually regarded not as a clinical entity but as a state of hemocytologic deficiency directly traceable to the effects of a variety of etiologic agents. Certain toxic substances, notably benzene,⁹ x-rays and radium,¹⁰ arsphenamine,¹¹ trim-trotoluene,¹² and bacterial toxins¹³ depress marrow function. In multiple myeloma and in widespread tumor metastases to the marrow,¹⁴ active hematopoietic tissue is destroyed by mechanical displacement. After due recognition is given to all the known causes which tend to depress the formation of the elements that take their origin in the bone marrow, however, there remains a residual so-called idiopathic group in which the etiologic factor or factors is not so obvious. Some of these cases appear to be identified with states of

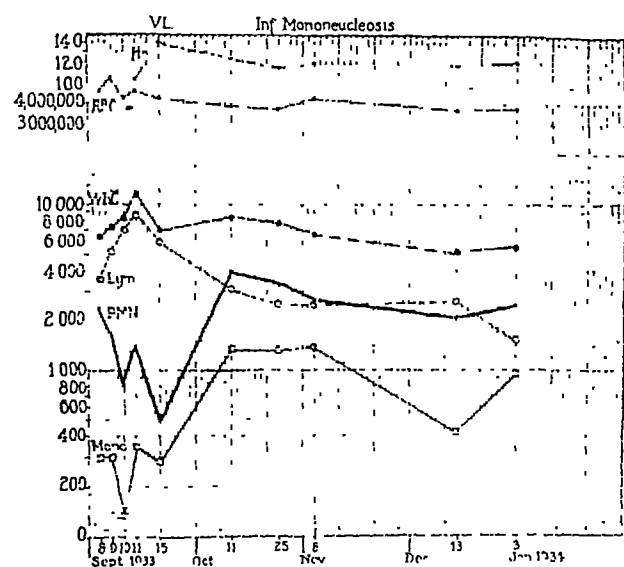


Fig 5—Blood changes in patient V L showing the reciprocal relationship between lymphoid and myeloid cells

unexplained lymphoid hyperplasia that are not clearly either lymphosarcoma or leukemia. The following case suggests that altered relative volumes of lymphatic and myeloid tissue may be important in determining or initiating progressive hypoplasia of the bone marrow in some cases in this "idiopathic" group.

CASE 1—A white girl aged 3 years admitted to the University Hospital, Aug 22, 1934 complained chiefly of pallor and weakness, which were said to have been present for two weeks prior to admission. The past history revealed no significant facts. On examination, the patient appeared to be

acutely ill, she was very pale, the respirations were rapid but there was no evidence of loss of weight, the tonsils were large, the pharynx was injected, the cervical glands were large, discrete, not attached to the skin and not tender. The epitrochlear, axillary and inguinal glands also were enlarged, ranging in size up to that of a lima bean. When the abdomen was examined the liver was found to be enlarged to 7.5 cm below the costal margin in the right anterior axillary line. The spleen extended down 2 cm below the left costal margin. Blood count performed on admission showed 3,200 white blood cells, 1,065,000 red blood cells, platelets 11,000 per cubic millimeter and hemoglobin 39 Gm per hundred cubic centimeters of blood, reticulocytes 0.1 per cent and a differential of 16 per cent polymorphonuclears, 2 per cent metamyelocytes, 2 per cent myelocytes, 78 per cent lymphocytes and 2 per cent monocytes. There was a shift to the left in the lymphocytes, but no leukemic cells were found. The clinical diagnosis was aplastic anemia with terminal secondary infection. Autopsy was performed by Dr H L Rhinehart, pathologist to the University Hospital. There was moderate hypertrophy of the lymphoid tissue, especially the retroperitoneal, mesenteric and perigastric nodes with prominent Peyer's patches and solitary follicles. Peripheral nodes were increased in size and seemed to be slightly fibrous on cut section. Bone marrow removed from the right femur tibia sternum and ribs showed the marrow cavity of normal size, filled with soft marrow, apparently fatty on the periphery and hemorrhagic in the center. Supravital scrapings from these areas showed very few cells.

Microscopically the lymph nodes (fig 7) showed many young lymphocytes and diffuse hyperplasia with invasion of the medulla by hyperplastic lymphoid tissue. There was definite increase in lymphoid tissue about the gastro-intestinal tract. The liver showed marked atrophy and degeneration about the central veins and lobules cloudy swelling throughout, and milary abscesses. The spleen showed marked increase in pulp with considerable congestion and very active malpighian bodies. The bone marrow sections (fig 8) throughout showed marked atrophy with considerable fibrous tissue proliferation. The remainder of the microscopic examination did not reveal anything additional to that observed in the gross. There was no evidence of leukemic infiltration in any of the tissues.

Both the clinical and the microscopic changes seemed to be quite classic for aplastic anemia, with terminal secondary infection, except that there was moderate to marked lymphoid hyperplasia. It is difficult to harmonize the adenopathy with the bone marrow hypoplasia on the ground of terminal infection alone, as it is well known that infectious states tend to cause atrophy rather than hypertrophy of the lymphoid tissue. It is significant that the lymphoid tissues were found to be unusually active in contrast to a relatively inactive bone marrow. It would seem, in view of the reciprocal reactions cited, that one must consider the possibility of a specific depressive effect on the bone marrow through an overbalance of the lymphatic components.

The observation of a second case similar to that described establishes the fact that, at least in some cases of "aplastic" anemia, the reduced volume of active myelopoietic tissue occurs in association with a reciprocal increase in the volume of lymphoid tissue.

Recent work has emphasized the effects produced on the bone marrow by surgical removal of the spleen.¹ In many instances, extirpation of this organ is followed by increased hematopoiesis with elevated levels of cells in the peripheral blood. After due consideration is given to local factors of sequestration and destruction of blood cells there still remains an apparent effect of the spleen on the bone marrow which tends to regulate

1. Doan Zervas Warren and Ames.² Doan C A Curtis G M and Wiseman B K. The Hemolytotoxic Equilibrium and Emergency Splenectomy. J A M A 105 1567 (Nov 16) 1935. Krumpholtz E B. Am J M Sc 166 329 (Sept) 1923. Barcroft Joseph. Lancet 1 319 (Feb 14) 1925. Barcroft Joseph and Nisimaru Y. J Physiol 74 299 (March) 1932.

9. Selling L. Bull Johns Hopkins Hosp 21 33 1910. Hamilton Alice. The Growing Menace of Benzene (Benzol) Poisoning in American Industry. J A M A 78 627 (March 4) 1922. McCord C P. The Present Status of Benzene (Benzol) Poisoning. ibid 93 280 (July 27) 1929.

10. Martland H S. Occupational Poisoning in Manufacturing of Luminous Watch Dials. J A M A 92 466 (Feb 9) 552 (Feb 16) 1929. Faber K. Ugeskr f Lager S5 8 (Jan 4) 1923.

11. Moore J E and Keidel Albert. Stomatitis and Aplastic Anemia Due to Neocarphenamine. Arch Dermat & Syph 4 169 (Aug) 1921.

12. Voegtlin Carl Hooper C W and Johnson J M. Bull 126 U S P H S Turnbull L. Proc Roy Soc Med 10 1 1916.

13. Smith L W. Report On An Unusual Case of Aplastic Anemia. Am J Dis Child 17 174 (March) 1919. Minot G R. Diminished Blood Platelets and Marrow Insufficiency. Arch Int Med 19 1062 (June) 1917.

14. Marsh H E. Ann Clin Med 3 162 (Aug) 1924. Herz O. München med Wchnschr 73 868 (May 21) 1926. Lee R I and Minot G R. Vel on Loose Leaf Medicine. New York 4 28 1928.

downward the production of these cells. In explanation of this relationship it has been suggested that there may be a direct inhibitory effect of the spleen on the bone marrow similar in nature to that of a hormone influence. Since the spleen represents the largest single accumulation of lymphatic tissue in the body, the experimental data in this communication give weight to the interpretation of the postsplenectomy-cellular increases from the marrow on the basis of the elimination of a substantial volume of lymphatic tissue. This establishes a rationale and provides the explanation for the favorable effects observed by therapeutic removal of the spleen in selected cases of "aplastic" anemia.

The important point to be determined is whether the hypoplasia of the bone marrow is primary or secondary to an overgrowth of the lymphatic structures. It is believed that the evidence for reciprocal hypoplasia and hyperplasia as furnished by the cases of leukemia which follow provides in addition to the experimental evidence substantial reasons for favoring the latter explanation over the former.

THE LEUKEMIAS

A Lymphatic—It has been held generally that the widely observed depression in bone marrow function which usually accompanies lymphatic leukemia is a result of the mechanical crowding out of the myeloid and erythroid elements by the infiltration of lymphatic elements. The relative importance of this mechanism in determining "symptomatic" hypoplasia of the marrow tissue, however, has not been established. In no other tissue of the body does lymphoid infiltration produce such widespread, almost total, failure of function and destruction of a parenchymatous organ. On the other hand, if the chief force that determines hypoplasia of the marrow elements in lymphatic leukemia is the increased volume of lymphocytes elsewhere acting through a specific reciprocal inhibitory influence rather than by mechanical pressure, hypoplasia of the bone marrow should be found in cases in which there is minimal evidence of the infiltration phenomenon. The following case of "aleukemic" lymphatic leukemia provides evidence that increased volume of lymphatic tissue and not marrow infiltration may be an important or even the chief determining factor in the hypoplasia of the bone marrow in lymphatic leukemia.

CASE 2—A child aged 2 years, admitted to the University Hospital, Feb. 10, 1935, complained of weakness, pallor and purpuric phenomena.

During the stay in the hospital of forty-nine days the anemia and tendency to hemorrhage was combated with four blood transfusions, but the case ran the usual course of a leukemia with several relapses followed by partial remissions. The patient died showing widespread hemorrhages from the mucous membranes and into the skin. The blood examination at the time of death showed 12,000 white blood cells, with a differential of polymorphonuclear leukocytes 10 per cent, myelocytes C 4 per cent, lymphocytes 82 per cent and monocytes 4 per cent. The red blood cells were 2,200,000, platelets 29,000 and hemoglobin 5.8 Gm per hundred cubic centimeters of blood. The autopsy was performed by Dr. Reid Joyce and in abstract revealed the following: There were purpuric spots on the scalp and over the cheeks, abdomen, chest, back and lower extremities. The occipital, cervical, axillary and inguinal nodes were distinctly enlarged and varied in size from a pea to that of a lima bean. The lymph nodes of the mesentery, the lumbar chain and the tracheobronchial trunks were particularly prominent, individual nodes reaching the size of a walnut. The liver weighed 650 Gm and extended 5 cm below the costal border in the right mammary line and 6.5 cm below the xiphoid process of the sternum. The spleen weighed 200 Gm and extended below the costal border 2.5 cm. With the exception

of hemorrhage into the parenchyma, the kidneys were not abnormal grossly. There were numerous hemorrhagic areas on the surface of the peritoneum, pleura, epicardium and endocardium. No pneumonia or tuberculosis was evident in the lungs. Bone marrow was secured from the tibia, femur, ribs and sternum and appeared in the gross to be marked by widespread hemorrhage and an increase in fibrous tissue.

The microscopic sections, with the exception of the bone marrow, revealed the usual lymphoid changes that are characteristic of lymphatic leukemia. The bone marrow was definitely hypoplastic without significant lymphoid infiltration in the areas studied. Only an occasional area showed the presence of many infiltrating leukemic cells. Figure 9 shows a section through the sternum, usually hyperplastic, in illustration of the presence of hypoplasia of marrow elements without concomitant lymphoid infiltration.

B Myelogenous Leukemia—Generalized swelling of the lymphoid structures in cases of myeloid leukemia is an almost constant feature of this disease. The reaction occurring within these structures which gives rise to such enlargement is, however, not clear beyond the fact that the cellular content is predominantly myelocytic. Protagonomists of the unitarian theory of blood formation hold that the myeloid cells arise in situ by virtue of the metamorphosis of the (totipotent) lymphoid elements. In contrast to this is the belief of many adherents of the polyphyletic doctrine that the explanation for the enlargement of the lymphatic nodes lies in the fact that these structures are infiltrated with primitive myeloid cells, in common with the other tissues throughout the body, and that these cells proliferate in exactly the same fashion as occurs in the bone marrow, the intrinsic lymphoid elements remaining passive and not undergoing myeloid metaplasia.

The following case of myeloid leukemia provided an opportunity not only to observe the histologic effects on lymphoid tissue when myeloid stimulation was dominant but also to clarify considerably the controversial points discussed in the foregoing paragraph.

CASE 3—A white boy, aged 11 years, was admitted to the pediatric service in the University Hospital, Jan. 29, 1934, and a diagnosis of acute myeloblastic leukemia was made.

Autopsy was performed August 6 by Drs. Lacey and Hargraves. The gross examination, in abstract, revealed an extensive sloughing lesion of the left side of the face with loss of the entire cheek and the left half of the mandible. There was an almost complete absence of subcutaneous fat. The peripheral lymph nodes were not palpable. The liver extended 5 cm below the costal border and weighed 970 Gm. The spleen extended to the costal border, weighed 250 Gm and showed multiple white areas about 1 mm in diameter. The lymph nodes, both superficial and deep, were very small, measuring from 2 to 5 cm in diameter, and were difficult to find. There were about 200 cc of clear straw colored pericardial fluid and about 500 cc of blood-tinged fluid in the peritoneal cavity. The bone marrow of the entire skeleton was characterized by extreme hyperplasia of gray tissue.

Microscopic study showed extreme myeloid hyperplasia of all bone marrow tissues, with a predominance of early myeloid cells. The spleen was heavily infiltrated with myeloid cells, and the lymphocytes of the malpighian bodies were largely replaced with myelocytes and myeloblasts. The lymph nodes presented a remarkable picture. On section they cut with greatly increased resistance, scrapings for supravital examination were obtained with great difficulty, and only a few cells could be found. All nodes showed a marked degree of atrophy, and the lymphocytes obtained from them were nearly all old types. Only an occasional myelocyte was found, but fibroblastic proliferation was prominent. Figure 10 shows the degree of atrophy and the absence of myeloid infiltration that characterized all the nodes.

This case afforded an opportunity to observe the state of the lymphoid structures when infiltration with myeloid elements was not present. Under such circum-

stances, the degree of atrophy of the lymphoid structures was remarkable. Fibrous tissue replacement of the normally rich lymphocytic areas in the nodes was comparable to that observed in the nodes of the animals with nuclemate induced leukocytoses. It was also noteworthy that although the bone marrow was hyperplastic for myeloid cells very few of these cells were found in the lymph nodes. The latter fact suggests that myelopoiesis, when it occurs in the lymph nodes, arises from metastatic cells and not from stimulation of the primitive cells preexisting in the nodes, since it is clear that in this case the stimulus for myeloid proliferation, although still dominant and effective in the body as reflected in the bone marrow, failed to stimulate the primitive cells in the lymphoid tissue to myeloid proliferation. In fact, quite the opposite condition prevailed, since atrophy and diminution in all cellular elements was the net result. It is felt that the tissue reactions in this case provide strong evidence for the theory of a reciprocal relationship existing between lymphoid and myeloid tissues in that the specific stimulus for myelopoiesis was accompanied by inhibition of lymphopoiesis in lymph nodes which did not show infiltration of myeloid cells.

COMMENT

The evidence cited, both experimental and clinical, strongly suggests the existence of a definite physiologic equilibrium between myeloid and lymphatic tissues. There would also seem to be some ground for the belief that physiologic and pathologic disturbances of this balance may lead to definite blood anomalies. While the evidence is only suggestive and not conclusive that lymphoid imbalance may play an etiologic role in the production of a specific type (not all types) of "aplastic" anemia, we nevertheless feel that the interpretation of the facts observed justify further consideration, study and experiment.

There would seem to be only two possible explanations for the reciprocal phenomena observed, as shown in the accompanying tabulation. First may be suggested the existence of a single substance (molecule) having stimulatory properties in one location and inhibitory effects in another location for the common stem cell. This hypothesis would seem to be decidedly contrary to both experience and logic. Modern beliefs relating to blood formation indicate that at least with respect to the white blood cells, all stem cells, wherever found are identical in potency.¹⁶ That they differentiate along dissimilar lines is the result of different environmental influences, different stimuli, or both. This explanation of the physiology of blood formation makes it extremely difficult to conceive of a single substance that could affect the same cell so differently with only the added help of a conditioning environment.

The only other obvious explanation that could adequately explain the facts of reciprocal response is integrated with the concept of a physiologic cellular equilibrium. This hypothesis entails the corollary that any considerable increase in the volume of either tissue must result in a corresponding diminution in the volume of the other. The experimental and clinical observations available apparently confirm this theoretical explanation and no facts at present contradict it. Positive proof must await further direct experiment. The mechanism whereby this equilibrium is physiologically controlled can be only a matter for speculation at this

time. Possibly there is only a limited and fixed amount of maturative substance essential for maturation present in the body at any one time, and a diversion of this material to one or the other of the actively growing tissues results in a deficit in supply to the other, the latter therefore undergoing involution. Possibly there is a specific inhibitory influence of each tissue on the other. Whatever the method whereby the equilibrium is controlled, it seems quite certain that some of the factors that influence or effect the balance of these tissues are clear. Endogenous or exogenous stimuli, toxins and similar substances specific for each cell type are undoubtedly important in disturbing the physiologic equilibrium. It is also certain that mechanical and physical factors may definitely alter the normal balance of these cells. This discussion therefore makes it probable that, fundamentally, two distinct types of clinical disease are theoretically possible as a result of a disturbance in this normal relationship: one in which the disturbing factor is secondary to an abnormal state elsewhere (example, infectious mononucleosis), and second, a type in which the disturbance is intrinsic and due to a failure of physiologic control (cited cases of "aplastic" anemia). Irrespective of the merits of the speculations herein, it is certain that the phenomena of reciprocal relationships of the blood cells must be considered henceforth in the interpretation (1) of the mechanism of cellular reactions, (2) of the microscopic changes in the blood forming tissues and (3) of the peripheral blood elements, not only in disease states in general but more especially in the blood dyscrasias.

SUMMARY

1. Experimental induction separately of myeloid and lymphoid tissue hyperplasia in rabbits suggests that hyperplasia of each tissue occurs at the expense of hypoplasia in the other. These changes are usually reflected in the peripheral blood by a reciprocal alteration in the levels of the myeloid and lymphatic cells.

2. Observations on the blood and tissues in certain clinical diseases provide instances in which this reaction is apparently responsible for some of the hitherto puzzling blood and tissue alterations regularly found.

3. It is suggested that disturbances of physiologic origin which alter the normal balance of blood-forming tissues may be important in the etiology of some of the blood dyscrasias. Two cases of "aplastic" anemia with unusual features, which have been cited possibly belong to this class.

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ABSTRACT OF DISCUSSION

DR. E. B. KRUMHAAER, Philadelphia. I am more impressed by the experimental evidence than by the clinical. Physicians are obviously handicapped in their approach to the study of an individual clinical case as compared with a similar study of experimental material and by the limitations of our ordinary blood counting technique. For instance, if one wants to get the absolute numbers of lymphocytes in a normal case and in a case of leukemia, one takes the total count of a normal case, say 8,000 leukocytes, and, if there are 25 per cent lymphocytes, that will give 2,000 lymphocytes. That figure is reached by taking a very small sample of blood as the basis for the total count and an equal amount of blood for the differential count. They are different samples in which a very small number of the actual cells are counted; the results being applied to large figures. There are numerous possible sources of error in such a technique. On the other hand, in a myeloid leukemia count, say 800,000 cells, of which only 1 per cent are lymphocytes by the differential smear, that would give 8,000 lymphocytes. It would have to be admitted that one could easily get 15 per

¹⁶ Wiseman, B. K. The Origin of the White Blood Cells. J. A. M. A. 103: 1524 (Nov. 17) 1934.

cent instead of 1 per cent, which would give 12,000 lymphocytes instead of 8,000. It is easy to see that the possible error in such a method is very large. I don't mean in any way to imply that the authors' counts are due to such errors, but such difficulties should be taken into account when one is studying clinical material and making deductions from these methods. Both the lymphocytes and the granulocytic series are concerned with resistance of the body to noxa of various kinds—to be sure, with different phases of the problem, but still enough on the same side that one would expect a priori, a synergistic relation of these two types of blood cells rather than a reciprocal inhibitory effect. Also one must take into account the occurrence of multiple stimuli which may override reciprocal relationship. That offers a perfectly logical explanation of such clinical cases when one fails to find this relationship but instead finds an increase of both polymorphonuclears and lymphocytes and other elements. However, if one has to take such exceptions into account and explain them in that way, it seems to me that that robs the clinical evidence of some of its significance. None of this, however, applies to the experimental evidence, which to me was very convincing, as were the histologic pictures of the marked inhibitory changes in the appropriate tissue. The remarks that I have brought forward should be taken in the light of suggestions for future study of the problem.

DR B K WISEMAN, Columbus, Ohio. This type of work, just as in all hematologic work, is in a state of flux at this time, and it will take many years to reveal the true significance of the investigative approaches being made from many angles.

Clinical Notes, Suggestions and New Instruments

PERFORATION OF THE GALLBLADDER WITH MASSIVE INTRAPERITONEAL HEMORRHAGE

WILLARD BARTLETT JR, MD, AND ROBERT W
BARTLETT, MD, St. Louis

Perforation of the gallbladder is itself an uncommon lesion but, when accompanied by massive hemorrhage, is an event of extreme rarity. A review of standard surgical textbooks, such as those of Babcock, Da Costa, Homans and Ashhurst, and of the Nelson and Lewis systems, discloses no mention of gross hemorrhage as a complication of perforation of the gallbladder. Moreover, one finds no reference to it in the large series of cases of perforated gallbladder reported by various authors. In reviewing the literature since 1900 we found mention of only two cases similar to the one reported herewith.

Waters¹ reports the case of a 63 year old woman who was seen after four days of illness with an abdominal emergency. Abdominal exploration was made with a tentative diagnosis of intestinal obstruction. Free blood and clots were encountered everywhere in the abdomen. "When the gallbladder was palpated the exploring hand withdrew about ten faceted stones of varying size. The true condition was then recognized." Further investigation revealed a perforation at the gallbladder neck, which had torn the cystic artery; there had been no local effort at walling off the perforation. About 200 stones were removed from the gallbladder after its fundus had been opened. Then, since the patient was in a precarious condition, a hemostat was placed at the neck of the gallbladder below the site of rupture and another along its hepatic attachment. A gauze pressure pack was then placed under the neck of the gallbladder. The patient recovered after a stormy postoperative course and was discharged about a month after admission to the hospital.

Schwyder² records the case of a 72 year old man who entered the hospital in a moribund condition two days following the onset of abdominal pain and vomiting. Death occurred within a few hours, and autopsy disclosed about two liters of free blood and clots in the abdominal cavity. The gallbladder was thickened and had suffered a tear 4.5 cm in length through the

site of an ulcer 4.5 by 2 cm situated in the wall of the free portion of the gallbladder. In the fundus was a much smaller, very deep ulcer showing grossly an eroded open blood vessel. The gallbladder contained no stones. It was the implied contention of the author that the erosion of the vessel resulted in bleeding into the gallbladder, and the subsequent rupture of the weakened wall at the site of the larger ulcer. No microscopic characteristics of either ulcer were described.

REPORT OF CASE

History—The case we report is that of Mrs C P, aged 65, white, a housewife, who was admitted to the Evangelical Deaconess Hospital, Feb 11, 1935, at noon, with chief complaints of abdominal pain, distention of the abdomen and constipation.

During the past year, two attacks of pain occurred in the epigastrium and between the scapulae, waking her at about 3 a m, with vomiting once in each attack followed by immediate relief of pain and return to sleep. February 9 a similar attack recurred but pain persisted, continuing thereafter being generalized with a slight tendency to localize in the lower quadrant. Abdominal distention came on within two hours and had been unrelied by countless enemas since. Vomiting occurred three times February 9, twice on the 10th and twice early on the 11th, but never a larger amount than ingested. There were two soft normal stools shortly after the onset of pain, no passage of stool or flatus had occurred since. There was slight frequency of urination with the present attack, no burning, pain or hematuria was observed.

The family history was irrelevant. The patient had never had any serious illness or operation. She had had dyspnea on exertion for years. There were no food idiosyncrasies. Stool occurred daily without physic. An uneventful menopause occurred at 52. There were several children living and well. The husband was in good health.

Physical Examination—We first examined the patient in her home in consultation with her physician, Dr Edward H Eyerman, at 3 p m, February 10. The patient was obese, obviously dehydrated and in considerable pain. The temperature was 100, the pulse 85. The abdomen was distended and the diaphragm elevated; there was generalized slight abdominal tenderness possibly more pronounced in the epigastrium. There was no peristalsis to auscultation; no masses or viscera were palpable. Leukocytes numbered 15,000. A tentative diagnosis of low intestinal obstruction associated with some such intraperitoneal infection as a perforated diverticulum was made, and immediate removal to the hospital was urged. Our combined efforts toward this end were unavailing.

On examination after admission to the hospital the following day, at noon, more dehydration was evident in the dry tongue, sunken eyes and skin. Examination of the head and neck gave negative results. The heart and lungs were normal except for a snapping second aortic sound. The abdomen was distended and presented generalized tenderness, no rigidity, but dullness in the flanks. The patient voluntarily indicated the right lower quadrant and the right flank as the source of her trouble. Pelvic and rectal examinations were negative; the temperature 104.4, pulse rate 102, respiration 40, blood pressure 165 systolic and 70 diastolic, hemoglobin 62 per cent, erythrocytes 3,396,000, leukocytes 20,000. The Schilling count showed segmented forms 78 per cent, stabs 10 per cent, lymphocytes 11 per cent and monocytes 1 per cent. Voided urine obtained somewhat later was acid, of amber color, specific gravity 1.025, albumin negative, sugar positive (intravenous administration), bile negative, indican positive and acetone positive. Microscopically there were 10 pus cells, a few red blood cells and a few hyaline casts per high power field.

A roentgenogram of the abdomen showed enormous distention of the large intestine and cecum, but no small intestinal patterns and no fluid levels. This finding again raised the question of a low obstruction with a competent ileocecal valve and a small barium sulfate enema was administered by Dr Joseph Peden, the barium passed promptly well across the transverse colon. Its administration was stopped for fear of increasing the pressure within the distended cecum. Fluoroscopic examination of the chest showed what appeared to be a

¹ Waters E C. *N J J Rec* 123: 11 (Jan) 1926.
² Schwyder K. *Zentralbl f allg Path u path Anat* 26: 361 1915.

nodule in the right lung base just above the diaphragm, a film showed an irregular area of infiltration of uncertain nature

On the return of the patient from the roentgen examination a nasal catheter was passed into the stomach and only 100 cc of light green fluid was obtained, continuous suction⁸ was started. One thousand cubic centimeters of Hartmann's solution was given as a hypodermoclysis and 1,500 cc of 5 per cent dextrose in physiologic solution of sodium chloride intravenously at the rate of 500 cc an hour. At 4 p m the patient looked much fresher and brighter the pulse rate was 90 respiration 35, blood pressure 195/95, temperature 99.6. Only 75 cc of greenish fluid had been recovered by suction from the stomach by this time. The patient was then considered to be a reasonable risk for operation. Our preoperative note at 4 p m states that there was practically no fluid in the stomach after two hours' suction. With the roentgen observations fever and blood picture it seemed certain that distention was due to an infectious process with paralytic ileus. Entire lack of localizing signs on physical examination left us faced with exploration without a more definite diagnosis but the very absence of such observations favored retrocecal appendicitis, probably perforated, less likely diagnoses were ovarian tumor on a twisted pedicle, Meckel's diverticulum, strangulated internal hernia and so on. A chest film showed an area of increased density that might be an early pneumonia but it was not of sufficient significance to postpone operation.

Operation—After morphine and ephedrine hypodermically, spinal analgesia was induced with 175 mg of procaine hydrochloride. An incision was made at the middle third of the right rectus muscle the latter being shelled out of its sheath, and fluid blood under tension welled out of the peritoneal cavity as soon as it was opened. Exploration of the pelvis revealed only an atrophic uterus with normal adnexa. It was estimated that there were 2 liters of fluid blood in the abdominal cavity and many clots. The exploring hand encountered several gallstones in the pelvis following which the incision was extended upward to the rib margin and the gallbladder was visualized. There was no sign of any localizing process around the gallbladder, on the under surface of which was a fairly clean, straight rent 3 cm long from which dark apparently venous, blood was slowly welling there was no distinct arterial spurting. The gallbladder wall was thin and the organ was of approximately normal size. Probably more than 100 small faceted stones were scattered around the peritoneum and a few remained in the gallbladder there was partial separation of the gallbladder from the liver bed and the latter was not bleeding. The rent in the gallbladder was sutured with a continuous suture in two rows, and a large Pezzar catheter was introduced through a small incision in the fundus into the gallbladder and the wall was inverted snugly around it with two rows of sutures. A gauze pack was placed around the gallbladder brought out at the upper angle of the incision, and walled off from the hollow viscera with a layer of gutta percha. The abdominal wall was then closed as a single layer with through and through sutures of silk worm gut.

Postoperative Course—A transfusion of 500 cc of blood was given immediately, and routine peritonitis care was instituted including inhalations of carbon dioxide and oxygen every hour. 3,000 cc of 5 per cent dextrose and saline solution was given intravenously at the rate of 300 cc an hour over night and the patient excreted 325 cc of urine. On the morning of the 12th the patient's condition was very satisfactory, the pulse was 110 respiration 24, blood pressure 148/82, temperature 100. There had been no nausea and the return from continuous suction of the stomach was negligible. The chest was negative to a limited examination. At noon the patient began to cough and became cyanotic, voiding involuntarily. At 4 p m the chest was full of coarse rales and resonance was impaired throughout the entire right lung, there was no change in the position of the heart. The pulse rate was 140 respiration 28, temperature 103. Roentgen examination showed cloudy infiltration and mottling throughout the entire right lung and questionable infiltration of the hilus area of the left lung these were considered to be signs of bronchial pneumonia. Bile was coming

through the Pezzar catheter at this time. The usual treatment with oxygen and digifolin was unavailing, and the patient died at 12 25 p m, February 13.

Autopsy—This was limited to the abdomen and was performed at once. The suture line around the Pezzar catheter in the gallbladder was intact, as was the suture line closing the tear in the gallbladder, and there was no sign of bleeding from either the liver bed or from the gallbladder itself. A few clots were found in the flanks and on the diaphragmatic surface of the liver. Liver, gallbladder, and common bile duct were removed *en masse* and taken to Dr I Y Olch in the surgical pathologic laboratory of the Washington University School of Medicine, who made the pathologic examination.

The material consisted of the liver and gallbladder removed at necropsy. A long Pezzar catheter was in the gallbladder and was held in place by a purse-string suture at the fundus. The gallbladder had been separated from its bed on the right and the quadrate lobes of the liver. Along the right margin of separation was a line of sutures holding together the gallbladder, where it was found at operation to be perforated into the free peritoneal cavity. This suture line appeared intact. The gallbladder measured 8 by 3 by 3 cm and contained no stones, although stones were said to have been present at operation. The serosa was rough, it was red, the walls were thickened to 5 mm and the mucosa was hemorrhagic and edematous. No stones were found on dissection of the valves of Heister and of the cystic duct. The hepatic duct was free of stones. The liver looked normal. The gross diagnosis was recent perforation of a gallbladder that was acutely inflamed and contained stones.

On microscopic examination a section showed a thick gallbladder wall which was markedly edematous. The mucosa was absent probably postmortem autolysis. Another section showed liver in which there was extensive central necrosis with considerable blood in the sinusoids in the midzonal areas.

The diagnosis was cholelithiasis, chronic cholecystitis.

COMMENT

The midzonal necrosis of the liver described microscopically was thought to be due to the terminal fever accompanying the fatal pneumonia. Since the gallbladder was not grossly thickened or edematous at operation the postmortem condition in the gallbladder was due, we believe, to the presence of the Pezzar catheter during the forty hours that elapsed from operation until death. It seems to us that vomiting associated with the onset of pain in the present illness, increased the intra-abdominal tension to such an extent that the thin wall of the gallbladder was pressed on its tightly packed content of sharply faceted stones with sufficient force to produce a tear through the wall and subsequent unchecked hemorrhage. An effort was made to dissect out the cystic artery in the surgical pathologic laboratory, but it proved to be so small that this was not practical. Its many branches were not located in the vicinity of the rent in the gallbladder.

508 North Grand Boulevard

CONTRAST STAIN FOR THE RAPID IDENTIFICATION OF TRICHOMONAS VAGINALIS

JAMES RAGLAN MILLER, M.D. HARTFORD, CONN.

The use of the hanging drop or wet smear under a cover glass for the identification of *Trichomonas vaginalis* occasionally offers difficulties when the organisms are few or when their motility is temporarily suspended. I have found that a drop of 0.1 per cent safranin is useful as a diluent for the pus that is to be examined. Not only the nuclear material but protoplasm also of the leukocytes rapidly takes safranin stain, whereas the *Trichomonas vaginalis* organism remains unstained and conspicuous as a clear object against a slightly pink background.

It is noticeable also that the safranin, at least in this dilution does not interfere with the motility shown by *Trichomonas*, if anything, it appears to stimulate it. Under the low power it is often possible more quickly to pick out areas where the organisms are numerous, so that identification with the high power objective can be quickly effected.

179 Allen Street

Council on Pharmacy and Chemistry**REPORTS OF THE COUNCIL**

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT
PAUL NICHOLAS LEECH Secretary

EPHEDRITONE INHALANT-MASSEY'S NOT ACCEPTABLE FOR N N R

Under the name "Ephedritone Inhalant," the Massey Laboratories, Inc., Nashville, Tenn., presented for the Council's consideration a preparation stated to contain 1 per cent each of ephedrine and chlorbutanol in an aromatic base, proposed for use "in congested conditions of the mucous membranes." The aromatic base is stated to contain a "stabilized vegetable oil" the nature of which was not specified. The Council accepts no product the composition of which is not adequately declared. In this case this requirement is of special importance in view of the possible presence in the oil of aldehydes that may be incompatible with ephedrine.

In the submitted advertising occurs the statement

Clinical tests made by leading specialists prove that the synergistic effects of Ephedrine and Chlorotone give a prolonged contraction of capillaries and prolonged reduction of swollen turbinates without irritation.

The Council is not aware of any convincing evidence that there is synergistic action between the two drugs. Instead of the vague reference to tests by "leading specialists," the firm should submit such evidence if it is available.

Perhaps the chief objection to this product from the Council's point of view is the use of the coined proprietary name Ephedritone for an unoriginal mixture of well known drugs. Fundamentally this objection is based on the fact that such names are not informative to the physician who prescribes, their use creates a multiplicity of names for the same medicament. 'Ephedritone' also carries a therapeutic suggestion, a fact that considerably aggravates its offense to rational therapeutics. In practice it has been found that such names facilitate injudicious and harmful self medication by the public. The physician prescribes the mixture for a given condition, the name sticks easily in the patient's mind, and the next time he or a friend has an ailment that seems similar, another bottle is obtained at the drug store and unknown symptoms may go untreated or contraindicated treatment may be given to other existing symptoms.

Although it has been informed of the Council's objections to the product for more than a year, the firm has taken no steps to make it acceptable. The Council voted therefore to declare Ephedritone Inhalant Massey's unacceptable for inclusion in New and Nonofficial Remedies, and authorized publication of this report.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH Secretary

SUPRARENIN (See New and Nonofficial Remedies, 1935, p 206)

The following dosage form has been accepted

Ampules Suprarenin Powder 0.05 Gm. Each ampule contains suprarenin bitartrate 0.091 Gm., equivalent to suprarenin 0.05 Gm.

NEODIARSENOL (See New and Nonofficial Remedies, 1935 p 78)

The following dosage form has been accepted

Ampules neol 18 Gm. Ampoules

RABIES VACCINE (See New and Nonofficial Remedies, 1935 p 380)

United States Standard Products Company, Woodworth, Wis.

Rabies Vaccine (Killed Virus) Semple (U. S. S. P. Co.) (See New and Nonofficial Remedies 1935 p 384)—Also supplied in the form of a 25 per cent suspension of brain substance containing 0.5 per cent of phenol. Marketed in packages of seven and fourteen vials each containing a single dose (0.5 cc.)

NORMAL HORSE SERUM (See New and Nonofficial Remedies, 1935, p 364)

The National Drug Co., Philadelphia

Normal Horse Serum (See New and Nonofficial Remedies 1935 p 365)—Also marketed in packages of one 10 cc vial and in packages of one 100 cc double ended vial complete with intravenous outfit. One cc of a 10 per cent dilution is included with each package for determining sensitivity of the patient by scratch or intradermal test.

Committee on Foods**ACCEPTED FOODS**

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

FRANKLIN C. BING Secretary

1 ALLERTON FARM BRAND EVAPORATED MILK**2 KOPPERS STORES BRAND EVAPORATED MILK**

Distributors—1 Pittsburgh Provision & Packing Company, Pittsburgh 2 Koppers Stores, Inc., Pittsburgh

Packer—Armour & Company, Chicago

Description—The procedure of evaporation and canning, and the analysis are essentially the same as for the usual evaporated milk (THE JOURNAL, April 16, 1932, p 1376)

CELLU BRAND SPINACH, WATER PACKED

Distributor—Chicago Dietetic Supply House, Inc., Chicago

Packer—Kings County Packing Company, Armona, Calif

Description—Canned spinach, packed in water

Manufacture—Spinach at the proper degree of maturity is trimmed, thoroughly washed, blanched, drained and packed in cans. The cans are filled with water, heated, sealed and processed.

Analysis (submitted by distributor)—

	per cent
Moisture	93.4
Total solids	6.6
Ash	0.8
Fat (ether extract)	0.4
Protein (N x 6.25)	2.1
Crude fiber	0.9
Starch (diastase method)	1.7
Carbohydrates other than crude fiber (by difference)	2.4

Calories—0.2 per gram 6 per ounce

Claims of Manufacturer—Choice quality spinach packed without added sugar or salt. For use in special diets in which sugar or salt is proscribed or in quantitative diets of calculated composition.

MEYENBERG ALL PURE BRAND EVAPORATED MILK

Manufacturer—Meyenberg Milk Products Company, Salinas, Calif

Description—Unsweetened, sterilized evaporated milk

Manufacture—Milk from farms under government supervision is inspected, filtered, evaporated, homogenized, cooled, standardized for milk-fat and total solids, automatically filled into cans, sealed and sterilized.

Analysis (submitted by manufacturer)—

	per cent
Moisture	73.4
Total solids	26.6
Ash	1.5
Fat (ether extract)	7.9
Protein (N x 6.38)	8.3
Lactose (by difference)	8.9

Calories—1.4 per gram 40 per ounce

Claims of Manufacturer—See announcement of acceptance of Evaporated Milk Association, Educational Advertising (THE JOURNAL, Dec 19, 1931, p 1890)

RADIOLOGIC SERVICE IN THE UNITED STATES

REPORT BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

The names of 1,274 physicians specializing in radiology are included in this, the sixth publication of the Council's list. The type of service rendered is given opposite the name 'Radiology,' under "Type of Service," always includes short wave therapy, also known as "deep therapy." The asterisk (*) on "Roentgenology" indicates that short wave therapy is included.

The publication of this list in this issue completes the duty assigned to the Council of preparing a list of radiologists. This function is now being transferred to the American Board of Radiology, which was approved by the Council on Medical Education and Hospitals, Dec 9, 1935. Many radiologists did not apply to the Council in anticipation of the formation of the Board. Recent applicants have been referred to the Board. Therefore the list on the following pages contains few additions and changes.

The list of the Board's diplomates to Jan 1, 1936 appears in 'Radiology' for January 1936.

The Board will conduct examinations in May and September of the present year. Appointments for examination are made through Dr B R Kirklin, Secretary, American Board of Radiology, Rochester, Minn.

PHYSICIANS SPECIALIZING IN RADIOLOGY

ALABAMA			NAME	ADDRESS	TYPE OF SERVICE
NAME	ADDRESS	TYPE OF SERVICE			
Anniston			Karshner Rolla G	510 S Lucas Ave	Roentgenology
Levi Irwin P	931 Noble St	Roentgenology	Kibby Sidney I	727 W 7th St	Roentgenology
Birmingham			King Cecil V	736 S Flower St	Radiology
Barfield Carter M	1929 1st Ave N	Roentgenology	Lilledahl Elmer N	1241 Shatto St	Roentgenology *
Kesmodel Karl F	1023 S 20th St	Radiology	MacColl Douglass I	2007 Wilshire Blvd	Roentgenology *
Mendows James A	1023 S 20th St	Radiology	Pindell Merl Lee	678 S Ferris Ave	Diagnostic roent
Sorrell Lewis E	2501 16th St	Roentgenology *	Snure Henry	1414 S Hope St	Radiology
Dothan			Solland Albert	1407 S Hope St	Roentgen therapy
Ellis John T	200 E Main St	Roentgenology	Stafford Owen R	520 W 7th St	Roentgenology
Fairfield			Taylor Raymond C	1212 Shatto St	Radiology
Troje Oscar P	1enn Coal Iron & R P	Radiology	Witter Calvin B	511 S Bonnie Brae St	Roentgenology *
Montgomery			Oakland		
Boswell F P	201 Montgomery St	Radiology	Bissell Frank S	1624 Franklin St	Roentgenology
			Bowen Carl B	1624 Franklin St	Roentgenology
			Jette S A	230 Grand Ave	Radiology
			Petch Phillip H	426 17th St	Roentgenology
			Peters Chas F	400 29th St	Roentgenology *
			Sargent Wm H	Hawthorne Ave and Webster St	Roentgenology *
			Siefert Alfred C	411 30th St	Radiology
Phoenix			Palo Alto		
Goss H L	125 W Monroe St	Roentgenology	Powers Robert A	261 Hamilton Ave	Roentgenology
Watkins W Warner	15 E Monroe St	Radiology	Starks Dorothy I	261 Hamilton Ave	Radiology
Tucson			Pasadena		
Hayden Edward M	2039 E 1st St	Diagnostic roent	Chapman John Frye	65 N Madison Ave	Roentgenology *
			Larker Carl H	65 N Madison Ave	Roentgenology *
			Pomona		
Fort Smith			Swearingen T C	586 N Main St	Radiology
Brooksber W R	602 Carrison Ave	Radiology	Redlands		
Hot Springs			Folkins F H	47 E Vine St	Roentgenology
Nims Chris H	236 Central Ave	Radiology	Riverside		
Little Rock			Thursson Paul I	3770 12th St	Diagnostic roent
Rhinehart Barton A	701 Main St	Roentgenology	Sacramento		
Rhinehart D A	701 Main St	Roentgenology	Briggs Rowland S	1014 8th St	Radiology
Zell A M	2000 Main St	Radiology	Cool Orrin S	1127 11th St	Roentgenology
Monticello			Graham Ralph S	2330 L St	Roentgenology *
Wilson T S			Lawson John D	526 J St	Radiology
			Zimmerman Harold	1027 10th St	Radiology
			San Bernardino		
Alameda			Owen C C	398 6th St	Roentgenology *
Lum Wm I	1361 Park St	Roentgenology *	San Diego		
Bakersfield			Kinney L C	1831 4th St	Radiology
Fox L H	2025 18th St	Roentgenology	Weiskotten W O	233 A St	Diagnostic roent
Berkeley			San Francisco		
Heald E Schulze	4000 Regent St	Roentgenology	Bryan Lloyd	450 Sutter St	Roentgenology *
Van Nuys R C	2490 Channing Way	Radiology	Capp Charles S	Parnassus and 3rd Aves	Radiology
Eureka			Crow Lloyd B	1431 Geary St	Roentgenology *
Woolford Joseph S	350 E St	Roentgenology	Donovan Monte	450 Sutter St	Roentgenology
Fresno			Fulmer Chas C	27th and Valencia Sts	Radium therapy
McGehee W H	2014 Tulare St	Diagnostic roent	Garland L Henry	450 Sutter St	Roentgenology *
Millholland W G	1001 Fulton St	Roentgenology	Hunsberger H S	450 Sutter St	Roentgenology *
Ruff Frank R	1234 S St	Radiology	Ingber I S	490 Post St	Diagnostic roent
Glendale			Leef Edward	2361 Clay St	Radiology
Christ David M	143 N Brand Blvd	Radiology	Lewitt Joseph	516 Sutter St	Radiology
Jones L L	229 N Central Ave	Roentgenology *	Newell Robert R	2361 Clay St	Radiology
Hollywood			O'Neill John R	2200 Hayes St	Roentgenology *
Sherman Benj H	6777 Hollywood Blvd	Roentgenology	Pice Frank M	2000 Van Ness Ave	Roentgenology *
Stewart Chas W	1640 N Vine St	Roentgenology	Rodenbaugh F H	490 Post St	Radiology
Warren J W	1322 N Vermont Ave	Radiology	Ruggles Howard E	384 Post St	Roentgenology *
Long Beach			Stone Robert S	Parnassus and 3d Aves	Roentgenology *
Heylman H H	117 E 8th St	Diagnostic roent	Williams A J	450 Sutter St	Radiology
Mayfield Claude	117 E 8th St	Diagnostic roent	Williams Francis	870 Market St	Radiology
Los Angeles			San Jose		
Abowitz Jacob	4933 Fountain Ave	Roentgenology	Broemser Milton A	311 S 1st St	Radiology
Balley Cornelius O	727 W 7th St	Radiology	Bullitt James B	241 F Santa Clara St	Radiology
Blaine Edward S	727 W 7th St	Roentgenology	Richards Charles M	241 F Santa Clara St	Radiology
Bonoff Karl M	1930 Wilshire Blvd	Roentgenology	Santa Barbara		
Carter Ray A	1200 N State St	Roentgenology	Gates Russell	1520 Chapala St	Roentgenology
Costolow Wm F	1407 S Hope St	Roentgen therapy	San Pedro		
		Radium therapy	Allen Albert	410 W 6th St	Diagnostic roent
		Roentgenology *	Santa Barbara		
Davis Kenneth S	2131 W 3d St	Roentgenology *	Clark Daniel M	1520 Chapala St	Diagnostic roent
Goin Lowell S	1920 Wilshire Blvd	Roentgenology	Geyman M J	1520 Chapala St	Radiology
Johnson Clayton I	1200 N State St	Diagnostic roent			

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
Ullmann H J	1520 Chapala St	Radiology	Peterson Nelson T	168 S E 1st St	Roentgenology
Ware James G	1513 State St	Roentgenology *	Rapp Gerrard	168 S E 1st St	Diagnostic roent Radium therapy
Santa Monica			Miami Beach		
Hopflirk C C	710 Wilshire Blvd	Diagnostic roent	Payton Frazier J	63d St and Collins Ave	Roentgenology Radium therapy
Stockton			Ocala		
McGurk Raymond T	242 N Sutter St	Poentgenology *	Moore J N		Diagnostic roent
Sheldon F B	242 N Sutter St	Radiology	Orlando		
COLORADO			Pines John A	108 E Central Ave	Roentgenology *
Colorado Springs			Weed Walter A	307 S Orange Ave	Radiology
Brown L Gordon	707 N Cascade Ave	Radiology	St Petersburg		
Denver			Feister O O	11th St and 7th Ave N	Radiology
Allen A D A	227 16th St	Roentgenology *	Herring John A	342 3d Ave N	Diagnostic roent
Bouslog John S	227 16th St	Radiology	Tampa		
Brandenburg H I	227 16th St	Radiology	Allen Bundy	706 Franklin St	Roentgenology *
Childs S B	227 16th St	Radiology	Brown Harold O	217 Madison St	Roentgenology *
Crosby L C	227 16th St	Radiology	Dickinson J C	706 Franklin St	Roentgenology *
Diemer Frederick F	1612 Tremont Pl	Diagnostic roent	West Palm Beach		
Newcomer Elizabeth	1612 Tremont Pl	Roentgenology *	Herpel Fredk A	Good Samaritan Hospital	Diagnostic roent
Newcomer N B	1612 Tremont Pl	Radiology	GEORGIA		
Schmidt Ernst A	4200 E 9th Ave	Radiology	Americus		
Stephenson F B	227 16th St	Roentgenology	Pendergrass R C		Roentgenology *
Wasson W W	227 16th St	Radiology	Atlanta		
Weeks Paul R	227 16th St	Roentgenology	Clari James J	478 Peachtree St N E	Roentgenology *
Withers Sanford	1612 Tremont Pl	Roentgenology Radium therapy	Hall O D	450 East Ave	Radium therapy
Longmont			Lake Wm F	384 Peachtree St N E	Roentgenology *
Matlack J A		Diagnostic roent	Landham J W	139 Forrest Ave N E	Roentgenology
Sterling			Rayle Albert A	44 Broad St N W	Radium therapy
Daniel I H		Roentgenology	Stewart Calvin B	904 Peachtree St	Roentgenology
Woodmen			Augusta		
Forney F A		Diagnostic roent	Holmes L P	753 Broad St	Roentgenology
CONNECTICUT			Savannah		
Bridgeport			Cole Wm A	24 E Taylor St	Poentgenology
Croark Owen J	881 Lafayette St	Diagnostic roent	Corson Eugene R	10 W Jones St	Roentgenology *
Lockhart R Harold	144 Golden Hill St	Radiology	Drane Robert	Liberty and Dryton Sts	Radium therapy
Parmelee B M	144 Golden Hill St	Radiology	McGee H H	346 Bull St	Roentgenology
Hartford			Thomasville		
Butler Nicholas G	50 Farmington Ave	Roentgenology	Collins J I	901 Cordon Ave	Radiology
Climan Max	242 Trumbull St	Diagnostic roent	IDAHO		
Hoffman Charles C	700 Main St	Diagnostic roent	Boise		
Ogden Ralph T	179 Allyn St	Radiology	Cenoway Charles V	105 N 8th St	Roentgenology *
Roberts Douglas J	179 Allyn St	Radiology	Lawiston		
Van Strander W H	179 Church St	Radiology	Johnson Paul W		Roentgenology *
Meriden			ILLINOIS		
Olls Fessenden N	165 W Main St	Roentgenology	Batavia		
Middletown			Mostrom H T		Diagnostic roent Radium therapy
Murphy James	101 Broad St	Radiology	Bloomington		
New Britain			Cantrell Thomas D	310 E Jefferson St	Radiology
Crant Arthur S	55 W Main St	Roentgenology	Crote Henry W	219 N Main St	Radiology
Loud Norman W	92 Grand St	Diagnostic roent	Rypins Edwin J	102 F Jefferson St	Radiology
New Haven			Chicago		
Bergman A P	27 Elm St	Diagnostic roent	Ansprach Wm L	1150 N State St	Radiology
Coldman George	201 Park St	Diagnostic roent	Arens Robt A	2839 Ellis Ave	Radiology
Scott Clifton R	215 Whitney Ave	Roentgenology *	Bauer August A	1305 E 63d St	Roentgenology *
Whentlev Louis F	420 Temple St	Roentgenology *	Bellin David S	411 Garfield Ave	Radiology
Norwalk			Blackmar Frank H	25 E Washington St	Roentgen therapy Radium therapy
Perkins Charles W	520 West Ave	Roentgenology *	Brams Julius	55 E Washington St	Radiology
Waterbury			Braun Benjamin D	25 E Washington St	Radiology
Atkins Samuel M	111 W Main St	Roentgenology *	Brown Wm L	55 E Washington St	Radium therapy
Harvey Joseph I	64 Robbins St	Roentgenology *	Case James T	180 N Michigan Ave	Radiology
Williamantic			Challenger Chester J	3117 Logan Blvd	Roentgenology
Kinney Kenneth K	29 North St	Roentgenology	Cook Carroll E	30 N Michigan Ave	Radiology
DELAWARE			Culpepper Wm L	1180 E 63d St	Roentgenology
Wilmington			Cushway B C	7752 S Halsted St	Radiology
Allen B M	909 Washington St	Diagnostic roent	Cutrer Peter	1200 Gilpin Pl	Diagnostic roent
Burns Ira	912 Jefferson St	Radiology	Damlani Joseph	767 Milwaukee Ave	Roentgenology
McElpatrick C C	1024 W 8th St	Diagnostic roent	Davis H E	180 N Michigan Ave	Radiology
DISTRICT OF COLUMBIA			Dick Paul G	55 E Washington St	Roentgenology
Washington			Foley Joseph M	1439 S Michigan Ave	Roentgenology *
Bierman M I	1801 Eye St N W	Diagnostic roent	Ford Charles	8017 Luella Ave	Roentgenology
Caylor C C	1829 Vermont Ave N W	Diagnostic roent	Grubbe Emil H	6 N Michigan Ave	Roentgen therapy
Christie A C	1835 Eye St N W	Radiology	Hartung Adolph	55 E Washington St	Radiology
Coe Fred O	1835 Eye St N W	Radiology	Herman Edward R	6319 S Halsted St	Roentgenology *
Eldridge W W Jr	Nichols Ave S E	Roentgenology *	Hodges Paul C	900 E 59th St	Radiology
Fluward Joseph F	1726 Eye St N W	Roentgenology	Hubeny M J	25 E Washington St	Roentgenology *
Croover T A	1835 Eye St N W	Radiology	Jenkinson David I	1931 Wilson Ave	Roentgenology *
Lattman Isidore	1835 Eye St N W	Radiology	Jenkinson E L	1439 S Michigan Ave	Radiology
Leibell Casmir	1029 Vermont Ave N W	Radiology	Kaplan Maurice I	3837 W Roosevelt Rd	Radiology
McPeal Edgar M	1835 Eye St N W	Radiology	Kitterman Peter G	6319 S Halsted St	Roentgenology
Merritt J A	1835 Eye St N W	Radiology	Landau George M	660 Groveland Park	Roentgenology
Moore A B	1835 Eye St N W	Radiology	Larkin A James	180 N Michigan Ave	Radium therapy
Moore Claude	815 Connecticut Ave N W	Roentgenology	Litschig Joseph J	551 Grant Pl	Roentgenology
Otell L S	1835 Eye St N W	Radiology	Maier Roe J	7752 S Halsted St	Radiology
Stimpington F I	1103 16th St N W	Roentgenology	Olin Harry A	6060 Drexel Blvd	Roentgenology
FLORIDA			Orndoff B H	2561 N Clark St	Radiology
Fort Lauderdale			Potter Hollis L	122 S Michigan Ave	Roentgenology
Hendricks F M	314 Sweet Bldg	Radiology	Richman Samuel H	1800 W Harrison St	Roentgenology *
Jacksonville			Rose Cassie Belle	1753 W Congress St	Radiology
McFuen H B	126 W Adams St	Roentgenology *	Royer Don J	841 E 63d St	Roentgenology
Shaw W Mel	117 W Duval St	Roentgenology *	Simpson Frank F	59 E Madison St	Radium therapy
Mandarin			Tichy L S	3200 W Cermak Rd	Roentgenology
Cunningham Lester W		Roentgenology	Trostler I S	25 F Washington St	Radiology
Miami			Walt Harold Nathan	3821 Washington Blvd	Roentgenology
Cleghorn Charles D	168 S E 1st St	Roentgenology	Wanninger W J	9116 Exchange Ave	Roentgenology
Lucifan Joseph H	168 S E 1st St	Radium therapy Roentgenology *	Warden R H	1044 N Francisco Ave	Radiology
			Warfield C H	1900 W Harrison St	Roentgenology
			Willy R C	1138 N Leavitt St	Roentgenology

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
Danville			Valparaiso		
Archibald James S	602 Green St.	Roentgenology	DeWitt C. H.		Diagnostic roent.
Dunham L. H.	41 N. Vermillion St.	Radiology	Vincennes		
Decatur			Moore Robert G.	21 N. 3d St.	Roentgenology
Flinn Fauntleroy	220 S. Webster St.	Radiology			
Deerfield			IOWA		
Davis Charles J.		Roentgenology	Anamosa		
East St. Louis			Rawson E. G.		Diagnostic roent.
Echternacht A. C.	234 Collinsville Ave.	Radiology	Atlantic		
Evanston			Greenleaf W. S.		Roentgenology
Conley Bernard M.	565 Howard St.	Roentgenology	Belle Plaine		
Crowder Earl R.	2650 Ridge Ave.	Roentgenology *	Newland Don H.		Diagnostic roent.
Iedoux Alfred C.	353 Ridge Ave.	Roentgenology	Boone		
Perry Gentz	636 Church St.	Radiology	Whitaker B. T.	703 9th St.	Radiology
Highland Park			Cedar Rapids		
Isels R. R.	2 N. Sheridan Rd.	Diagnostic roent.	Frisline Arthur W.	120 3d Ave. S. E.	Radiology
Jacksonville			Clinton		
Brouse Ivan E.	316 W. State St.	Roentgenology *	Knudsen Hubert K.	419 S. 2d St.	Roentgenology *
Joliet			Lenaghan Robt. T.	2405 N. 2d St.	Roentgenology
Houston Alfred W.	106 N. Chicago St.	Roentgenology	Council Bluffs		
La Grange			Hawkins Emmet I.	420 F. Washington Ave.	Radiology
McClure C. F.		Roentgenology	Des Moines		
Lincoln			Burcham Thos. A.	406 6th Ave.	Radiology
Hagans Frank M.	400 Broadway	Radium therapy	Dubuque		
Mattoon			Irishman Lester C.	1596 Delhi St.	Roentgenology
Morgan Chas. F.	213 S. 17th St.	Roentgenology	Eagle Grove		
Mount Carmel			Christensen John R.		Roentgenology
Ellins Harold A.		Roentgenology	Iowa City		
Mount Vernon			Gillies Carl L.	University Hospital	Radiology
Smith Elmer M.	1001½ Broadway	Roentgenology	Kerr H. Dabney	University Hospital	Radiology
Oak Park			LeMars		
Ronayne Frank J.	518 N. Austin Blvd.	Radiology	Larsen W. W.		Roentgenology *
Olney			Marshalltown		
Weber James A.	R. D. 4	Diagnostic roent. Radium therapy	Talley Louis F.	Main St. and 3d Ave.	Roentgenology
Ottawa			Ottumwa		
Pettit Roswell T.	728 Columbus St.	Radiology	Spilman H. A.	101 S. Market St.	Diagnostic roent.
Peoria			Webb Harold H.	117 E. Main St.	Roentgenology *
Decker Fred H.	410 Main St.	Radiology	Sioux City		
Goodwin P. B.	730 N. Glen Oak Ave.	Radiology	Gibbon W. H.	423 6th St.	Radiology
Magee H. B.	410 Main St.	Radiology	Waterloo		
Quincy			Britt Otis W.	325 Sycamore St.	Radiology
Beirne H. P.	646 Hampshire St.	Roentgenology	Kestel John I.	325 Sycamore S.	Radiology
		Radium therapy			
Perley Arthur E.	510 Maine St.	Radiology	KANSAS		
Swanberg Harold	510 Maine St.	Radiology	Beloit		
Rockford			Vallette H. B.		Diagnostic roent.
Ackermann H. W.	321 W. State St.	Radiology	Eldorado		
Springfield			Dinsmore W. S.	324 W. Central Ave.	Diagnostic roent.
Hilt Lawrence M.	107 S. 5th St.	Roentgenology *	Fort Scott		
O'Hara F. S.	403 F. Capitol Ave.	Radiology	Prichard J. R.	209 S. Main St.	Radiology
			Kansas City		
INDIANA			Allen Lewis C.	905 N. 7th St.	Radiology
Evansville			Lee Glen M.	39th and Rainbow Blvd.	Radiology
Cleveland W. P.	24 N. W. 4th St.	Radiology	Lawrence		
Meyer Keith T.	600 Mary St.	Diagnostic roent.	Jones H. T.	107 E. 8th St.	Diagnostic roent.
Fort Wayne			Salina		
Rodriguez Juan	2902 Fairfield Ave.	Radiology	Brittman O. R.	105 S. 7th St.	Roentgenology
Van Buskirk F. M.	347 W. Berry St.	Radiology	Topeka		
Frankfort			Finney Guy A.	901 Kansas Ave.	Roentgenology
Chutick A. G.	206 E. Walnut St.	Roentgenology	Floersch M. A.	700 Kansas Ave.	Roentgenology
Gary			Owen Arthur K.	901 Kansas Ave.	Roentgenology
Dietrich Paul H.	540 Tyler St.	Roentgenology	Wichita		
Sagel Jacob	1600 W. 6th Ave.	Radiology	Frost E. I.	227 E. Douglas Ave.	Radiology
Hammond			Swope Ople W.	100 N. Main St.	Radiology
Rauschenbach C. W.	5245 Holman Ave.	Roentgenology	Webb I. A. H.	106 N. Main St.	Radiology
Indianapolis			KENTUCKY		
Beeler Raymond C.	23 E. Ohio St.	Radiology	Ashland		
Collins James N.	23 E. Ohio St.	Radiology	Cooper John Ralph	1540 Winchester Ave.	Roentgenology *
Jochry P. L.	Fall Creek Blvd. and Ill. nois St.	Roentgenology	Lexington		
Smith Lester A.	23 E. Ohio St.	Radiology	Harding Donnan B.	190 N. Upper St.	Radiology
Stanton Chester A.	23 E. Ohio St.	Roentgenology *	Thompson J. Campbell	201 W. Short St.	Roentgenology
Wright Cecil S.	1040 W. Michigan St.	Radiology	Louisville		
Kokomo			Bell J. C.	332 W. Broadway	Radiology
Ferry Paul W.	224 N. Main St.	Diagnostic roent.	Finfield Chas. D.	332 W. Broadway	Radiology
LaFayette			Fugate J. T.	608 S. 4th St.	Radiology
McClelland D. C.	908 N. 8th St.	Roentgenology *	Herrmann Henry C.	321 W. Broadway	Radiology
Siehler Harper G.	2400 South St.	Roentgenology	Johnson Sydney E.	101 W. Chestnut St.	Roentgenology
Michigan City			Kelth D. J.	412 W. Chestnut St.	Radiology
Martin F. A.	127 F. 5th St.	Radiology	Kelth J. P.	412 W. Chestnut St.	Radiology
Muncie			Martin William C.	321 W. Broadway	Roentgenology
Moore P. D.	Jackson and High Sts.	Radiology	Owensboro		
New Castle			Gillim P. D.	1001 Pearl St.	Roentgenology
Iterman Geo. F.	1319 Church St.	Roentgenology	Shelbyville		
Plymouth			Byles B. W.		Roentgenology
Knott Harry		Roentgenology	Winchester		
Shelbyville			Browne I. H.		Diagnostic roent.
Inlow Herbert H.	18 W. Washington St.	Diagnostic roent.	LOUISIANA		
South Berd			Alexandria		
Fisher Lawrence F.	105 E. Jefferson Blvd.	Roentgenology *	Barker H. O.	327 3d St.	Roentgenology
Terre Haute			Baton Rouge		
Pierce H. J.	627 Cherry St.	Radiology	Williams Lester I.	251 3d St.	Radiology
Union City			Houma		
Reid Fober W.		Roentgenology	St. Martin T. I.		Roentgenology

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
Mansfield			Brockton		
Curtis H P D		Roentgenology	Packard Loring B	680 Center St	Roentgenology
Monroe			Dalton		
Moore Daniel M	128 De Siard St	Roentgenology	Sullivan P J		Roentgenology
New Orleans			Fall River		
Am J Norell	921 Canal St	Roentgenology	Tennis M N	538 Prospect St	Radiology
Bowie E R	3503 Prytanla St	Radium therapy	Haverhill		
Porter L A	2000 Tulane Ave	Radiology	Popoff Constantine	26 Summer St	Roentgenology *
ately T f	2000 Tulane Ave	Radiology	Spruill John	50 Merrimack St	Radiology
Franger Amedee	210 Baronne St	Roentgenology	Holyoke		
Magruder I W	2700 Napoleon Ave	Radiology	Harrington Elmer I	199 Chestnut St	Roentgenology *
Menville J I	921 Canal St	Radiology	Lawrence		
Bodick John C	3500 Prytanla St	Roentgenology *	Burgess Charles I	77 Whitman St	Radiology
Samuel F C	3503 Prytanla St	Radiology	Leary Alfred J	477 Essex St	Roentgenology
Felbbaum Meyer D	3500 Prytanla St	Radiology			Radium therapy
Shreveport			Lowell		
Anderson Johnson R	1130 Louisiana Ave	Roentgenology *	Stewart Ralph C	226 Central St	Roentgenology
Barrow S C	624 Travis St	Radiology	Malden		
Ldwids H C F	624 Travis St	Radiology	Warren Alva H	82 Beltian St	Roentgenology
Harwell W R	624 Travis St	Radiology	New Bedford		
Rutledge C P	1030 Highland Ave	Radiology	Bonnar James M	90 Hillman St	Roentgenology
Thomas A Jerome	624 Travis St	Roentgenology			
	MAINE		North Adams		
Auburn			Bunce James W	85 Main St	Roentgenology
Cunningham C H	66 Coff St	Diagnostic roent	Crawford J W	191 E Main St	Radiology
Bangor			Northampton		
Ames Forrest B	489 State St	Roentgenology	James Benjamin F	11 Elm St	Roentgenology
Hunt Barbara	254 State St	Radiology	Pittsfield		
Lewiston			Cox Michael J	74 North St	Roentgenology *
Wilson S A	299 Main St	Roentgenology	Quincy		
Portland			Altman Wm S	26 Adams St	Radiology
Cummings Edson S	12 Pine St	Diagnostic roent	Salem		
Limb Frank W	131 State St	Diagnostic roent	Tivnan Paul F	70 Washington St	Roentgenology
Thayer Langdon F	22 Arsenal St	Roentgenology	Somerville		
Waterville			Blais Allen H	81 College Ave W Som	Roentgenology
Goodrich John P	214 Main St	Diagnostic roent	Springfield		
Jubell Moses I	Highwood St	Roentgenology	Davis Ernest L	20 Maple St	Roentgenology *
			Horgan A J	20 Maple St	Roentgenology *
			Jackson Howard J	146 Chestnut St	Roentgenology
			Powers Richard J	25 Maple St	Radiology
			Solomon Bennett	115 State St	Roentgenology
			Van Allen Harvey W	19 Maple St	Radiology
	MARYLAND		Webster		
Baltimore			Bragg Leslie R	260 Main St	Diagnostic roent
Ashbury Howard I	101 Read St	Roentgenology *	Worcester		
Burnam Curtis I	1418 Lutaw Pl	Radiology	Cool Phillip H	27 Elm St	Roentgenology
Frans John	101 Read St	Roentgenology	Langill Morton H	56 Pleasant St	Radium therapy
Feldman Maurice	2425 Eutaw Pl	Diagnostic roent			Roentgenology
Frei Whitmer B	1100 N Charles St	Roentgenology *			
Hill Eben C	N Broadway and Monument Sts	Roentgenology			
Kahn Max	2 W Read St	Roentgenology *			
Ostro Marcus	1910 Eutaw Pl	Roentgenology *			
Herson J W	1107 St Paul St	Roentgenology *	Adrian		
Say Benjamin I	2237 Eutaw Pl	Diagnostic roent	Chase A W	130 Toledo St	Diagnostic roent
Walton Henry I	101 Read St	Roentgenology	Ann Arbor		
Waters Charles A	1100 N Charles St	Roentgenology *	Donaldson Samuel W	326 N Ingalls St	Roentgenology
Wright Harold F	101 Read St	Diagnostic roent	Hodges Fred J	1313 E Ann St	Roentgenology
Crisfield			Pelceir Carlton B	1513 E Ann St	Radiology
Collins C F		Roentgenology	Battle Creek		
Cumberland			Corline C S	25 W Michigan Ave	Roentgenology
Cowherd F G	122 S Centre St	Roentgenology	Kolvoord Theodore	5 W Michigan Ave	Roentgenology
Easton			Jannan Emmett J	Tompkins St and N Michi	
Hammond William I		Roentgenology		gan Ave	Roentgenology
Frederick			Upton W O	North Ave and Emmett St	Roentgenology
Derr John S	35 F Church St	Roentgenology *	Bay City		
Hagerstown			Alfali Alois L	109 16th St	Roentgenology *
Hofmieler F N	King and Antietam Sts	Roentgenology	Detroit		
Salisbury			Berris I M	10 Peterboro St	Diagnostic roent
Williams Jack H	203 W Church St	Roentgenology	Blilelo Carl C	1151 Taylor Ave	Roentgenology
			Bloom Arthur R	5037 Woodward Ave	Roentgenology
			Chene George C	1503 Woodward Ave	Roentgenology
			Dempster Jas H	5761 Stanton Ave	Diagnostic roent
			Dielson B R	337 W Grand Blvd	Roentgen therapy
	MASSACHUSETTS				Radium therapy
Boston			Doub Howard P	2799 W Grand Blvd	Radiology
Blackett Chas W	5 Bay State Rd	Roentgenology	Palms F I	1503 Woodward Ave	Roentgenology
Bogan Isabel K	16 Beacon St	Roentgenology	Pisen Paul	258 S Algonquin St	Roentgen therapy
Butler P E	35 Bay State Rd	Radiology			Radium therapy
Cleaves Edwin N	570 Marlboro St	Diagnostic roent			
Coffin W K	438 Marlboro St	Roentgenology	Frans Wm A	10 Peterboro St	Radiology
Friedman Harry I	270 Commonwealth Ave	Radiology	Ford Frances A	432 F Hancock Ave	Radium therapy
George Arist W	43 Bay State Rd	Roentgenology	Grice Joseph M	11729 St Marys St	Radiology
Hampton A O	Fruit St	Radiology	Hall F Walter	10 Peterboro St	Radiology
Healy Thomas I	570 Marlboro St	Roentgenology *	Hasley Clyde K	13 Woodward Ave	Radiology
Holmes Geo W	Fruit St	Radiology	Lucy Huns A	13 Woodward Ave	Radiology
Leonard Ralph D	43 Bay State Rd	Roentgenology	Keenling J C	1503 Woodward Ave	Roentgenology
Levene George	92 F Concord St	Roentgenology *	Leucilla Truman	1825 Brush St	Radiology
MacMillan A S	193 Beacon St	Roentgenology	Minor Edward C	3001 W Grand Blvd	Roentgenology
McCarthy H I	413 Beacon St	Roentgenology	Reynolds Lawrence	10 Peterboro St	Radiology
McFee William D	41 Bay State Rd	Roentgenology	Sanderson S E	5037 Woodward Ave	Radiology
Merchen John W	475 Commonwealth Ave	Roentgenology *	Shore O J	3001 W Grand Blvd	Roentgenology
Moloney Albert M	47 Bay State Rd	Radiology	Stevens Rollin H	1553 Woodward Ave	Radiology
Morrison Sidney I	70 Marlboro St	Roentgenology *	Ulbrich Henry L	1129 F Grand Blvd	Roentgenology *
O'Brien Fredk W	465 Beacon St	Radiology	Weaver Clarence E	113 Martin Pl	Roentgenology
Osgood Herman A	144 Commonwealth Ave	Roentgenology *	Wilcox Leslie F	10 Peterboro St	Radiology
Ott George J	344 Commonwealth Ave	Roentgenology	Wittwer F I	3839 Brush St	Radiology
Parkins Roy S	50 Commonwealth Ave	Roentgenology	Flint		
Rizzo Max	455 Commonwealth Ave	Radiology	Clift Myron W	900 Begole St	Radiology
Rollins Samuel A	636 Beacon St	Roentgenology	Macduff R Bruce	112 W Kearsley St	Roentgenology *
Sosman M C	721 Huntington Ave	Roentgenology *	Grand Rapids		
Vance R C	264 Beacon St	Roentgenology	Menee Thomas O	2662 Wealthy St St	Radiology
Vogt J C	300 Longwood Ave	Roentgenology	Moore Vernon M	110 F Fulton St	Radiology
Watts Henry F R	6 Monardock St Dor	Diagnostic roent	Muller John H	26 Sheldon Ave S F	Radiology
Whitless Frank E	720 Beacon St	Roentgenology	Smith Richard L	Mich St & Bostwick Ave	Diagnostic roent
Whelan Charles	394 Commonwealth Ave	Radiology	Stonehouse Garnet C	26 Sheldon Ave S E	Radiology
			Williams Alden H	26 Sheldon Ave S F	Radiology

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
Jackson			Spinzig Edgar W	508 N Grand Blvd	Roentgenology
Cooley R M	524 Lansing Ave	Roentgenology	Titterington P F	508 N Grand Blvd	Roentgenology
Kugler J C	1905 Grovedale Ave	Roentgenology	Zink Oscar C	5335 Delmar Blvd	Roentgenology
Porter H W	1020 E Michigan Ave	Radiology	Springfield		
Yalamazoo			Cole Paul F	200 Pershing Ave	Radiology
Crane A W	420 S Rose St	Roentgenology *			
Jackson John B	418 S Rose St	Roentgenology *			
Lansing				MONTANA	
Davenport Carroll S	1210 W Saginaw St	Roentgenology *	Billings		
Huntley Fred M	908 N Capitol Ave	Roentgenology	Bridenbaugh J H	208½ N Broadway	Radiology
Monroe			Watkins C F	115 N 28th St	Radiology
Moll T M	120 Maple Blvd	Diagnostic roent	Great Falls		
Muskegon			Waller Dora	503 1st Ave N	Roentgenology
Holly Leland E	876 N 2d St	Radiology			
Plainwell				NEBRASKA	
Hudnutt O D		Roentgenology	Beatrice		
Pontiac			Penner H C	113 S 5th St	Poentgenology *
Church J E	35 W Huron St	Roentgenology	Rush Weaver A	607 W Court St	Radiology
Pool H H	35 W Huron St	Roentgenology	Grand Island		
Saginaw			Woodruff, R C	306½ N Locust St	Roentgenology
Anderson Wm K	316 S Porter St	Diagnostic roent	Hastings		
St Johns			Rork Lee W	131 N Hastings Ave	Roentgenology *
Ho T Y		Diagnostic roent	Lincoln		
Traverse City			Kall Carl	4410 South St	Roentgenology *
Minor E B	208½ E Front St	Diagnostic roent	Rowe Edward W	128 N 13th St	Radiology
Ypsilanti			Smith Roscoe L	1307 N St	Radiology
Pillsbury Chas B	23 N Washington St	Diagnostic roent	Omaha		
			Fouts Roy W	107 S 17th St	Radiology
	MINNESOTA		Hardy Clyde C	101 S 17th St	Roentgenology
Duluth			Harris T T	407 S 16th St	Roentgenology
Clement Gage	915 E 1st St	Radiology	Hunt Howard B	36th and Cumling Sts	Radiology
McNutt John R	324 W Superior St	Roentgenology	Kelly J I	107 S 17th St	Radiology
Mankato			McAvin James S	2457 S 16th St	Radiology
Wentworth A J	Main and Broad Sts	Radiology	Overgaard A P	107 S 17th St	Roentgenology *
Minneapolis			Ross W L	407 S 16th St	Roentgenology
Allison R G	78 S 9th St	Roentgenology *	Tyler Albert F	103 S 17th St	Radiology
Fleming A S	900 Nicollet Ave	Radium therapy	Scottsbluff		
Harrington Chas D	78 S 9th St	Radiology	Plehn Frank W		Roentgenology
Nordin G T	825 Nicollet Ave S	Roentgenology *			
Rigler Leo G	412 Delaware St S E	Diagnostic roent		NEVADA	
Sundt Mathias	91 S 7th St	Roentgenology	Reno		
Ude Walter H	78 S 9th St	Roentgenology *	Piersall C E	120 N Virginia St	Radiology
Rochester					
Bowling Harry H	Mayo Clinic	Roentgenology		NEW HAMPSHIRE	
Camp John D	Mayo Clinic	Radium therapy	Concord		
Desjardins A U	Mayo Clinic	Diagnostic roent	Eveleth Fred S	12 Court St	Roentgenology
		Roentgen therapy	Dover		
Fricke Robert E	Mayo Clinic	Radium therapy	Chesley Harry O	507 Central Ave	Roentgenology
Kirklin B R	Mayo Clinic	Radium therapy	Hanover		
Leddy Eugene T	Mayo Clinic	Diagnostic roent	Sycamore Leslie K		Radiology
Sutherland Charles G	Mayo Clinic	Radium therapy	Manchester		
Weber Harry M	Mayo Clinic	Diagnostic roent	Merrill A S	814 Elm St	Roentgenology
St Cloud			Nashua		
Kern M J	8 6th Ave N	Roentgenology *	Davis S C	168 Main St	Roentgenology
St Paul			Rock T I	77 Main St	Diagnostic roent
Aurelius J R	350 St Peter St	Roentgenology *			
Schons Edward	25 W 4th St	Radiology		NEW JERSEY	
			Asbury Park		
	MISSISSIPPI		Herrman William C	501 Grand Ave	Radiology
Greenville			Atlantic City		
Beals John A	301 Washington St	Diagnostic roent	Bradley Robert A	1616 Pacific Ave	Radiology
Gulfport			Naighn Charles B	905 Pacific Ave	Roentgenology
Van Ness Edwin B	2605½ 14th St	Roentgenology	Bayonne		
Houston			Larkey C J	700 Avenue C	Diagnostic roent
Williams J Rice		Roentgenology *	Beachwood		
Laurel			Swan Guy Howard		Roentgenology *
McCormick H G	531 7th St	Roentgenology	Camden		
McComb			Roberts Joseph E	403 Cooper St	Roentgenology
Ratcliff Marion D	Maryland and 4th Sts	Diagnostic roent	East Orange		
Natchez			May Ernst A	157 Harrison St	Radiology
Beekman Marcus	307 Franklin St	Diagnostic roent	Reitter George S	144 Harrison St	Radiology
			Elizabeth		
	MISSOURI		Vogel Herbert A	1060 E Jersey St	Diagnostic roent
Holden			Ward Leo J	137 W Jersey St	Radiology
Thompson Wm G		Radiology	Englewood		
Joplin			Edwards J Bennett	350 Engle St	Roentgenology *
McGaughey, H D	607 Main St	Radiology	Flemington		
Kansas City			Tompkins G B		Diagnostic roent
Dann David S	306 E 12th St	Roentgenology	Hoboken		
Deweese E R	906 Grand Ave	Roentgenology	Broeser Henry V	105 Newark St	Roentgenology
Donaldson Clyde O	1103 Grand Ave	Radiology	Jersey City		
Lockwood Ira H	306 E 12th St	Radiology	Maver William W	532 Bergen Ave	Roentgenology *
McCandless O H	306 E 12th St	Roentgenology	Perlberg Harry J	921 Bergen Ave	Roentgenology *
McDermott J L	1103 Grand Ave	Radiology	Montclair		
Skinner Edward H	1103 Grand Ave	Radiology	Schimmelpfennig R D	56 Church St	Roentgenology
Virden C E	1103 Grand Ave	Radiology	Newark		
St Joseph			Baker Charles F	198 Clinton Ave	Roentgenology *
McGlothlan A B	824 Edmond St	Roentgenology *	Devlin Frank	617 Broadway	Radiology
Rivold Henry J	401 N 6th St	Radiology	Furst Nathan James	301 Lyons Ave	Roentgenology *
St Louis			Gelber Louis J	41 Lincoln Ave	Roentgenology
Allen Wm E Jr	4202a Easton Ave	Roentgenology	Henle Carye Belle	671 Springfield Ave	Roentgenology
Ernst Edwin C	3720 Washington Ave	Radiology	Hood Philip G	19 Lincoln Park	Diagnostic roent
McCutchen L C	3320 N Kingshighway	Roentgenology *	Marquis W James	198 Clinton Ave	Roentgenology
Moore Sherwood	600 S Kingshighway	Radiology	Pomeranz Raphael	31 Lincoln Park	Roentgenology *
Mueller Wilbur K	607 N Grand Blvd	Roentgenology	Reissman Erwin	31 Lincoln Park	Radiology
Peden Joseph C	634 N Grand Blvd	Roentgenology *	Wyatt Joseph H	135 Clinton Ave	Radiology
Sante L R	634 N Grand Blvd	Radiology			

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
New Brunswick			Cooperstown		
Avery Philip S	Albany and Somerset Sts	Radiology	Cruttenden Harry L		Radiology
Klein Wm	85 Bayard St	Radiology	McCoy Charles C		Roentgenology *
Passaic			Cortland		
Terhune Percy H	171 Paulison Ave	Diagnostic roent	Sornberger Frank F	16 Church St	Roentgenology
Paterson			Elmhurst		
Golding Harry N	180 Carroll St	Roentgenology	Startz Irving S	40 16 Gleane St	Roentgenology *
Roemer Jacob	213 Broadway	Radiology	Elmira		
Perth Amboy			Bennett John A	222 W Church St	Roentgenology
Klein Edward F	136 Market St	Radiology	Endicott		
Plainfield			Ford G R	134 Washington Ave	Roentgenology *
Boyes James G	744 Watchung Ave	Roentgenology *	Far Rockaway		
Rochelle Park			Lesoff Morris I	856 Central Ave	Roentgenology *
Pallen C de S		Radium therapy	Rifkin Hyman	918 Cornaga Ave	Roentgenology *
Skillman			Glens Falls		
Pigott Albert W		Diagnostic roent	Birdsall Edgar	140 Glen St	Roentgenology
Successunna			Gloversville		
Plume C A		Diagnostic roent	Denham H C	12 Prospect Ave	Roentgenology
Summit			Hempstead		
Disbrow G Ward	193 Morris Ave	Roentgenology	Robin Nathaniel H	131 Fulton Ave	Roentgenology *
Tidabrick John D	382 Springfield Ave	Roentgenology	Williams P A	131 Fulton Ave	Roentgenology *
Trenton			Hudson		
Darison R Winthrop	205 W State St	Radiology	Harris Rosslyn P	427 Warren St	Diagnostic roent
West New York			Ithaca		
Goldstone Karl H	16 18th St	Radiology	Larkin Leo P	114 N Tioga St	Radiology
Woodbury			Mechanicville		
Downs Elwood E		Radiology	Green Geo A		Diagnostic roent
NEW MEXICO			Middletown		
Albuquerque			Schmitz Walter A	18 Highland Ave	Roentgenology
Johns E W	221 W Central Ave	Roentgenology	Walton James W	60 Prospect Ave	Roentgenology
Van Atta J R	219 W Central Ave	Radiology	Mount Kisco		
Warden M R	715 E Grand Ave	Diagnostic roent	Vaughan F E		Diagnostic roent
NEW YORK			Newburgh		
Albany			Miller Raymond A	212 Grand St	Diagnostic roent
Cross Warren C	New Scotland Ave	Roentgenology	Reed Charles B	205 Liberty St	Roentgenology
Howard W P	46 Willett St	Roentgenology	New Rochelle		
Murnane I T	New Scotland Ave	Radiology	Chliko Alexander J	30 Disbrow Lane	Roentgenology *
Prentice D D	287 State St	Radiology	Duckworth Willard D	421 Huguenot St	Roentgenology *
Amsterdam			New York City		
Wilson David	156 Cuy Parl Ave	Roentgenology	Abbott Hodson A	622 W 168th St	Roentgenology
Auburn			Abraham Adolph	829 Park Ave	Radiology
Austin Sedgwick F	54 E Genesee St	Roentgenology	Arons Isidore	667 Madison Ave	Radium therapy
Bull Harry S	11 William St	Diagnostic roent	Baum S M	200 W 58th St	Radium therapy
Bay Shore			Bendick Arthur J	2 E 77th St	Radiology
Cohoon Carl Wm		Roentgenology	Bernstein I H	106 E 85th St	Radiology
Binghamton			Besser Herman	114 E 54th St	Roentgenology
Kann Ulysses S	69 Walnut St	Radiology	Boone Wm H	428 W 59th St	Roentgenology *
Shaw Perry H	93 Main St	Diagnostic roent	Bower Jacob	133 E 58th St	Roentgenology
Brooklyn			Bushy Archibald H	133 E 71st St	Diagnostic roent
Bayles William H	1901 Bedford Ave	Diagnostic roent	Cameron William H	30 F 40th St	Radium therapy
Bell A L Loomis	340 Henry St	Radiology	Carly John R	525 E 68th St	Roentgenology
Blaser Homer S	137 Orington Ave	Diagnostic roent	Cole Lewis Gregory	36 E 61st St	Roentgenology *
Cramp George W	506 6th St	Roentgenology *	Debbie Anthony C	303 E 20th St	Diagnostic roent
Curran Francis W	1136 Dean St	Radiology	Diefenbach W H	50 Central Park West	Radiology
Dunnenberg Max	1464 Eastern Parkway	Roentgenology	Dixon Geo S	1150 5th Ave	Diagnostic roent
Eastmond Charles	483 Washington Ave	Roentgenology *	Duffy James J	424 Park Ave	Radium therapy
Ehrenpreis B	576 Eastern Parkway	Roentgenology	Ehrlich David Ernest	27 W 86th St	Radiology
Elliott F E	122 76th St	Radiology	Fairchild C W	11 E 48th St	Diagnostic roent
Forbes Geo	291 Hancock St	Roentgenology	Ferguson A B	420 E 59th St	Roentgenology
Friedmann Asa R	257 New York Ave	Radiology	Fierstein Jacob	1018 E 163d St	Roentgenology *
Gold Louis	835 Willoughby Ave	Diagnostic roent	Fineman Solomon	133 E 58th St	Diagnostic roent
Goldfarb Louis	608 Ocean Ave	Diagnostic roent	Fox Fiske	384 E 149th St	Roentgenology
Goodman Moses	2100 66th St	Radiology	Francis William J	121 Madison Ave	Roentgenology
Held Louis Arthur	255 Eastern Parkway	Roentgenology *	Fried Jacob R	1049 Park Ave	Radiology
Hovos William E	152 Clinton St	Roentgenology	Fried Herman	333 West End Ave	Roentgenology *
Ingraham Ruth	121 Dekalb Ave	Diagnostic roent	Friedland Henry	2021 Grand Concourse	Diagnostic roent
Kaufman Julius	201 Eastern Parkway	Roentgenology	Friedman Lewis J	315 E 18th St	Roentgenology
Lefine Isaac	1210 49th St	Diagnostic roent	Friedman Max	1940 Grand Concourse	Diagnostic roent
Liferson F	612 Eastern Parkway	Diagnostic roent	Friedman Milton	309 W 103d St	Radium therapy
Masterson John J	401 76th St	Roentgenology *	Friedmann Joseph	53 W 73d St	Radiology
Mendelson Emanuel	132 Paris Ave	Roentgenology *	Fruehlich Eugene	28 W 74th St	Roentgenology
Nathanson Louis	700 Ocean Ave	Radiology	Glassman I	138 E 36th St	Diagnostic roent
Rendick Richard A	116 Remsen St	Roentgenology	Goldberg N J	460 E 138th St	Diagnostic roent
Schenck Samuel G	115 Eastern Parkway	Radiology	Golden Ross	622 W 168th St	Roentgenology
Schiff Charles H	1000 Park Pl	Diagnostic roent	Gottlieb Charles	210 W 79th St	Roentgenology
Segall L Martin	4701 15th Ave	Roentgenology *	Groeschel L B	911 Park Ave	Radiology
Silverstein I S	315 New York Ave	Roentgenology	Harris Wm	70 E 77th St	Radium therapy
Sirahl Milton I	255 New York Ave	Diagnostic roent	Herendeen Ralph E	30 E 40th St	Radium therapy
Taormina Louis J	1093 Gates Ave	Roentgenology	Hirsch Henry	2488 Grand Concourse	Roentgenology *
Teperson H I	744 Eastern Parkway	Radiology	Hirsch I Seth	136 E 64th St	Radiology
Van Winkle LeRoy I	Kingsland and Skillman Aves	Diagnostic roent	Horvath Rudolph J	1085 Park Ave	Diagnostic roent
Vasch Milton C	871 Park Pl	Radiology	Howard J Campbell	40 E 61st St	Roentgenology *
Weinstein Samuel	1138 Eastern Phway	Roentgenology *	Huber Frank	30 E 40th St	Roentgenology *
Westing Siegfried W	180 Lenox Rd	Diagnostic roent	Hlick H Earl	111 E 76th St	Roentgenology
Buffalo			Imboden Harry M	30 W 56th St	Radiology
Burnes John M	875 Lafayette Ave	Roentgenology *	Jacobs Leopold	100 E 94th St	Radiology
Bayliss J W	472 Delaware Ave	Roentgenology	Jacobs Alexander W	40 W 72d St	Radium therapy
Cotter Stephen V	1457 Abbott Rd	Diagnostic roent	Johnson Redford A	30 E 40th St	Diagnostic roent
Defraff Ralph M	131 Linwood Ave	Diagnostic roent	Kaplan Ira I	55 E 86th St	Radium therapy
Cian Franceschi I S	101 Niagara St	Diagnostic roent	Kaplan Morris	130 Henry St	Diagnostic roent
Helminkak M J	929 Fillmore Ave	Roentgenology *	Kasabach Halg H	622 W 178th St	Radiology
Koenig Edward C	100 High St	Diagnostic roent	Kassow Israel O	1840 Grand Concourse	Diagnostic roent
Lape C Leavies	183 Oxford Ave	Diagnostic roent	Kean Albert	100 E 94th St	Radiology
Lery Sidney H	33 Allen St	Roentgenology	Klein Isadore	100 Central Park South	Radiology
Leryn Lester	40 North St	Diagnostic roent	Kraft Ernest	73 E 64th St	Roentgenology *
Mattick Walter I	290 Highland Ave	Diagnostic roent	Kurz Bernard	1235 Grand Concourse	Diagnostic roent
Moses Chester D	333 Linwood Ave	Roentgenology *	Landsman I J	80 William St	Diagnostic roent
Orr Clifford R	1093 Ellicott St	Radiology	Lapman Charles	2754 Grand Concourse	Diagnostic roent
Schreiner B E	113 High St	Roentgenology			
Smith B B	333 Linwood Ave	Diagnostic roent			
Thompson A W	135 Linwood Ave	Roentgenology			

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
Law Frederick M	140 E 54th St	Diagnostic roent	Durham		
Lefrak Louis	144 E 36th St	Diagnostic roent	Reeves R J	Duke Hospital	Radiology
Lenz Maurice	180 Ft Washington Ave	Roentgen therapy	Smith Wm L	Watts Hospital	Radiology
		Radium therapy			
Levin Isaac	57 W 57th St	Radiology	Goldsboro		
Lewis Raymond W	225 E 61st St	Diagnostic roent	Irey H B	139 W Walnut St	Roentgenology
Missaro Alfonso F	117 E 19th St	Diagnostic roent			Radium therapy
Merrill E Forrest	30 W 59th St	Roentgenology *	Greensboro		
Meyer William Henry	303 F 20th St	Roentgenology *	Rhudy Booler E	101 N Elm St	Roentgenology
Ossip Abraham	152 Henry St	Diagnostic roent	Shohan Joseph	122 S Green St	Roentgenology *
Ourlin Adom K	175 Lexington Ave	Roentgenology			
Phillips Herman B	9 W 68th St	Radiology	Raleigh		
Pomeranz Maurice M	911 Park Ave	Radiology	Noble Robert P	127 W Hargett St	Roentgenology *
Posner Herman Paul	467 E 138th St	Diagnostic roent			
Powell C B	2368 7th Ave	Diagnostic roent	Rocky Mount		
Quimby A Judson	5 E 57th St	Roentgenology	Fleming Major I	404 Falls Road	Roentgenology
Radding Moses B	24 W 74th St	Roentgenology *	Spencer		
Remer John	200 W 59th St	Roentgenology *	Sigman F G		Roentgenology
Richman Samuel	1049 Park Ave	Radiology	Statesville		
Robinson C Allen	10 D 61st St	Radium therapy	McElwee R S	153 Broad St	Roentgenology
Robinson William I	322 W 72d St	Roentgenology	Washington		
Ryan E J	421 W 113th St	Roentgenology	Kluttz DeWitt		Roentgenology
Schechter Samuel	315 W 86th St	Diagnostic roent	Winston Salem		
Scholz Thomas	38 E 85th St	Diagnostic roent	Rousseau J P	310 W 4th St	Radiology
Schoedel Max I	319 E 6th St	Diagnostic roent			
Schwartz C W	33 E 68th St	Roentgenology			
Schwartz Irving	1150 5th Ave	Diagnostic roent			
Sinberg Samuel F	114 F 54th St	Roentgenology			
Sittenfeld M J	29 W 74th St	Roentgen therapy			
		Radium therapy			
Snow Wm	941 Park Ave	Roentgenology	Bismarck		
Spillman Ramsay	115 E 61st St	Diagnostic roent	Berg H Milton	221 5th St	Roentgenology *
Steiner Joseph M	170 East End Ave	Roentgenology *	Fargo		
Stevens J Thompson	745 5th Ave	Roentgen therapy	Rothnem Thos Peter	807 Broadway	Roentgenology
		Radium therapy	Minot		
		Roentgenology	Hansen Cyrus O	20 4th Ave S W	Radiology
Stewart Wm H	111 E 76th St	Diagnostic roent			
Sussman Macy J	166 L 96th St	Diagnostic roent			
Swenson Paul C	622 W 168th St	Diagnostic roent			
Taylor Henry K	667 Madison Ave	Diagnostic roent			
Unger Arthur S	135 E 74th St	Roentgenology	Akron		
Weinberg Tobias B	310 E 15th St	Roentgenology	Selby John Hunter	159 S Main St	Roentgenology
Weiss Leopold D	36 W 59th St	Roentgenology	Stall A H	525 L Market St	Radiology
Weitzner Imre	1015 Lexington Ave	Radiology	Stewart J E	159 S Main St	Roentgenology
Weitzner Samuel I	1882 Grand Concourse	Radiology	Voke Edward J	256 W Cedar St	Roentgenology
White Stephen	57 W 57th St	Roentgenology			
Wood Francis C	1145 Amsterdam Ave	Roentgen therapy	Ashtabula		
		Radium therapy	Collander P J	217 Park Pl	Roentgenology
Niagara Falls			Canton		
Scott Walter Roger	308 Pine Ave	Radiology	Hendrickson Anna I	115 Dewalt Ave N W	Roentgenology *
Ossining			Peters Chester M	300 McKinley Ave N W	Radiology
Wyser Doreen D	304 Spring St	Roentgenology	Shorb John L	411 3d St N W	Roentgenology *
Oswego			Chillicothe		
Wallace H M	140 W 5th St	Roentgenology	Holmes Ralph W	Cherry and Chestnut Sts	Roentgenology
Peekskill			Cincinnati		
Snowden Fred A	108 Depew St	Roentgenology	Brader J R	441 Vine St	Radiology
Port Chester			Brodderger Wm I	2301 E Hill Ave	Roentgenology
West Theodore	Boston Post Rd	Radiology	Brown Samuel	707 Race St	Roentgenology *
			Dillard Charles E	514 Clark St	Roentgenology
Poughkeepsie			Doughty Wm M	441 Vine St	Radiology
Davison Chester O	Lincoln Ave and Reids Il	Radiology	Goosmann Charles	22 W 7th St	Radiology
Richmond Hill			Koehler C W	19 Garfield Place	Radiology
Voltz Albert L	11020 Myrtle Ave	Radiology	Lange Sidney	19 Garfield Place	Radiology
Rochester			McCarthy Justin E	707 Race St	Roentgenology
Almy Max A	16 N Goodman St	Roentgenology	Reinke Harold G	Burnet Ave and Goodman St	Roentgenology *
Davidson Sol C	277 Alexander St	Radiology	Warne B M	19 Garfield Place	Roentgenology
Flynn James M	277 Alexander St	Radiology			
Fray Walter W	260 Crittenden Blvd	Roentgenology *	Cleveland		
Green Joseph H	277 Alexander St	Roentgenology *	Bettelheim Frederick	1021 Prospect Ave	Radiology
Ingeman Leslie I	301 W Main St	Roentgenology *	Farmer H L	10515 Carnegie Ave	Radiology
Sanders J J	213 Alexander St	Roentgenology	Freedman Edward I	2060 E 9th St	Roentgenology *
Thomas Camp C	476 Lake Ave	Roentgenology	Freedman Eugene	2065 Adelbert Rd	Radiology
Warren Stafford I	260 Crittenden Blvd	Radiology	Hausser Harry	3395 Scranton Rd	Radiology
			Hill Walter C	10515 Carnegie Ave	Roentgenology
Saratoga Springs			LePere Walter I	9400 Euclid Ave	Roentgenology *
King Earl H	75 Caroline St	Roentgenology	Mahre H A	10515 Carnegie Ave	Radiology
Schenectady			May Raymond V	10515 Carnegie Ave	Radiology
Crouch A N	Nott St and Ross Rd	Diagnostic roent	May Robert J	10515 Carnegie Ave	Radiology
			McNamee Edgar P	1422 Euclid Ave	Diagnostic roent
Syracuse			Nichols B H	2020 E 93d St	Radiology
Callira Salvatore	710 Prospect Ave	Diagnostic roent	Osmond John D	10515 Carnegie Ave	Roentgen therapy
Childs Donald S	713 F Genesee St	Roentgenology *	Portmann U V	2020 E 93d St	Radium therapy
Hadley Lee A	713 F Genesee St	Roentgenology *			
Henry Lucas S	116 E Castle St	Roentgenology	Steel David	7911 Detroit Ave	Roentgenology
Javine Reuben	601 S Warren St	Roentgenology	Thomas M A	10515 Carnegie Ave	Radiology
Potter Carlton I	425 Waverly Ave	Roentgenology	West James H	10515 Carnegie Ave	Radiology
Rullson Foster C	713 E Genesee St	Roentgenology	Yelson I E	2060 E 9th St	Roentgenology
Utica			Columbus		
Hall Robert C	258 Genesee St	Roentgenology	Bowen Chas F	332 E State St	Radiology
Powers M F	250 Genesee St	Roentgenology	Fulton Huston I	327 E State St	Roentgenology *
			Harris Herman I	273 State St	Roentgen therapy
Valhalla			Kirkendall Ben R	137 L State St	Radium therapy
Morris William J		Roentgenology *			Radiology
			Means Hugh J	683 F Broad St	Radiology
Watertown			Miller W H	328 D State St	Radiology
Pawling Jesse I	100 Stone St	Roentgenology	Reinert Edward	247 E State St	Radiology
		Radium therapy	Riebel Frank A	15 W Goodale St	Radiology
Sickels T N	120 Stone St	Radiology	Sims Geo P	188 F State St	Radiology
White Plains			Weirauch H V	9 Buttle Ave	Roentgenology
Duckworth R D	170 Maple Ave	Roentgenology	Dayton		
Sherman Herbert	99 Church St	Roentgenology	Burnett Harry W	209 S Main St	Radiology
			Delscamp W H	209 S Main St	Roentgenology *
Woodhaven			Jones Lynn W	117 S Main St	Radiology
Knapp John C	5525 86th St	Radiology	Price Rudolph J	209 S Main St	Radiology
			Fremont		
			Ihilo D W	209 W State St	Roentgenology
			Gallipolis		
			Wilson Milo		Radiology
Asheville			Hamilton		
MacRae J Donald	346 Montford Ave	Radiology	Benzing George Jr	R D 3	Radiology
Murphy G W	30 Battery Park Ave	Roentgenology *			
Charlotte			Lakewood		
Tafferty Robert H	127 W 7th St	Radiology	McDowell John P	15701 Detroit Ave	Roentgenology
Thoms Clyde C	127 W 7th St	Radiology	Shetter North W	14600 Detroit Ave	Roentgenology

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
Lima			Erie		
Thomas Herbert A	131 N Elizabeth St	Radiology	Putts B Swaine	117 W 8th St	Radiology
Martins Ferry			Greensburg		
Krupp David D	93 N 3d St	Roentgenology	McMurray H A	107 S Main St	Roentgenology
Massillon			Hanover		
Holston J D	876 Amherst Rd N E	Diagnostic roent	Bortner C E	123 York St	Diagnostic roent
Piqua			Harrisburg		
Spencer Robert D	400 N Main St	Roentgenology	Ritzman A Z	234 State St	Roentgenology *
Salem			Hatboro		
Heck Stanton	1100 E State St	Roentgenology	Shoemaker Robt III		Roentgenology
Sandusky			Hazleton		
Hill Lyle S	526 Columbus Ave	Roentgenology	Dessen Louis A	4 W Broad St	Roentgenology
Springfield			Huntingdon		
Brubaker F R	8 W Main St	Radiology	Kelchline John M		Radiology
Uiles Will	E High St and Burnett Rd	Roentgenology *	Johnstown		
Steubenville			Scharmann Frank C	118 Franklin St	Diagnostic roent
Miller J L	401 Market St	Radiology	Stewart H M	218 Franklin St	Radiology
Toledo			Lancaster		
Goodrich Murray L	2001 Callingswood Ave	Roentgenology *	Davis Henry B	330 N Lime St	Roentgenology
Kahn Dalton	237 Michigan St	Roentgenology	Snake Paul O	124 College Ave	Radiology
Murphy John I	421 Michigan St	Radiology	Swab Robert D	23 F Walnut St	Roentgenology
Warren			Lebanon		
Cauchat Paul C	197 W Mariet St	Roentgenology	Boger John D	341 Cumberland St	Diagnostic roent
Simpson D C	775 Mahoning Ave N W	Roentgenology	Lewistown		
Wauseon			Wenver O M	12 S Main St	Roentgenology
Maddox Wm H		Roentgenology	Lock Haven		
Youngstown			Green Geo D		Roentgenology
Bachman M H	314 N Phelps St	Roentgenology *	Mahanoy City		
Baker Edgar C	Youngstown Hospital	Radiology	Kapo Peter J	211 W Center St	Radiology
Heberding John	151 W Rayen Ave	Roentgenology	McKeesport		
Heeley T A	275 W Federal St	Roentgenology	Snedden A R	722 Walnut St	Roentgenology
Meyer N N	26 Market St	Diagnostic roent	Meadville		
Tamarkin Saul I	1026 Belmont Ave	Roentgenology *	Cingold Joseph R	470 4 Pine St	Roentgenology
Zanesville			New Castle		
Holston J G F	620 South St	Roentgenology	Cooper T R	111 E North St	Radiology
Loebell Maurice A	114 N 6th St	Roentgenology *	New Kensington		
			Brown Prentiss A	901 5th Ave	Roentgenology
OKLAHOMA			Norristown		
Marlow			Campbell Raymond F	511 Swede St	Diagnostic roent
Talley C N		Diagnostic roent	Parkasle		
Oklahoma City			Strouse O H		Roentgenology
Headley John F	119 N Broadway	Diagnostic roent	Philadelphia		
Myers Ralph Emerson	1200 N Walker St	Radiology	Alexander I K	880 Germantown Ave	Radiology
Okmulgee			Barker Walter T	37 S 20th St	Radiology
Wing Charles M	220 S Morton Ave	Roentgenology	Bertin Elmer J	34th St and Cedar Ave	Roentgenology
Shawnee			Bird C C	1415 W Erie Ave	Roentgenology
Hughes T I	14 E 9th St	Diagnostic roent	Bishop Paul A	8th and Spruce Sts	Radiology
Sulphur			Borzell Francis F	4940 Penn St	Roentgenology
Annadown P V		Diagnostic roent	Bowen David R	8th and Spruce Sts	Radiology
Tulsa			Bruck Samuel	2104 Pine St	Roentgenology
Larrabee W S	108 W 6th St	Roentgenology	Carpenter Samuel A	2205 N 16th St	Roentgenology
Lhevine Monk I	108 W 6th St	Diagnostic roent	Chamberlain W F	3401 N Broad St	Radiology
Stuart Leon H	108 W 6th St	Roentgenology	Edelken Louis	1832 Spruce St	Radiology
OREGON			Evans Harry D	1120 N 63d St	Roentgenology *
Eugene			Farrell John T Jr	235 S 15th St	Roentgenology *
Barnett Arthur F	1111 N Broadway	Roentgenology	Feldstein Sidney I	1829 Pine St	Roentgenology *
Medford			Frank Jacob W	1730 Spruce St	Roentgenology *
Moffatt F J	7 N Central Ave	Roentgenology	Cershon Cohen I	245 S 17th St	Roentgenology
Portland			Henry Robert W	708 S 13th St	Roentgenology
Butler Frank F	1020 S W Taylor St	Roentgenology	Hutton Frederick C	1409 N 15th St	Roentgenology *
Haworth Wallace	933 S W 11th St	Roentgenology	Koenig Carl F	1734 Harrison St	Roentgenology *
Palmer Dorwin I	1130 S W Morrison St	Radiology	Kornblum Karl	1813 Lombard St	Radiology
Rees Sherman F	2447 S W Westover Rd	Roentgenology *	Manges Willis F	255 S 15th St	Roentgenology *
Wight Otis B	931 S W 11th Ave	Radium therapy	Merchant Albert A	3401 N Broad St	Roentgenology *
Woolley Ivan M	1020 S W Taylor St	Roentgenology *	Newcomet W S	3501 Baring St	Radiology
PENNSYLVANIA			O Boyle Cyril I	4930 Walnut St	Roentgenology *
Allentown			Ostrum H W	1729 Pine St	Radiology
Smyth Thos I	111 N 9th St	Radiology	Pancoast Henry K	3400 Spruce St	Radiology
Troxell Wm C	941 Hamilton St	Radiology	Pendergrass Eugene I	3400 Spruce St	Radiology
Altoona			Perelval M F	Broad and Wolf Sts	Radiology
Alleman George F	1121 13th Ave	Roentgenology	Pfahler George F	1930 Chestnut St	Roentgenology
Bliss Gerald D	1220 13th Ave	Radiology	Post Joseph W	1930 Chestnut St	Roentgenology *
Ashland			Rieger Chas L W	1304 Rockland St	Radiology
Mulligan P B		Roentgenology	Rosenbaum George	1721 Spruce St	Radiology
Bethlehem			Schmidt Wm Henry	1601 Walnut St	Radiology
Leichert H F	R D 4	Roentgenology	Sender Arthur C	1311 W Allegheny Ave	Roentgenology
Bryn Mawr			Solis Cohen Leon	2110 Spruce St	Roentgenology
Bromer Ralph S		Roentgenology	Spackman F W	1824 Chestnut St	Radiology
Chester			Stecher Wm R	1000 S 60th St	Radiology
Egbert Walter E	601 F 13th St	Roentgenology *	Stull H Tuttle	2260 N Broad St	Roentgenology
Sharpe A Maxwell	708 Sprout St	Roentgenology *	Sturr Robert I	269 S 19th St	Roentgenology
Clearfield			Yastine Jacob H	1930 Chestnut St	Radium therapy
Reiley W E		Radiology	Widmann B P	250 S 18th St	Radiology
Coatesville			Wiley Louis R	1512 N 15th St	Roentgenology
Perkins J A	367 Chestnut St	Diagnostic roent	Zuffel J Donald	2008 Walnut St	Roentgenology
Conshohocken			Phillipsburg		
Burrill Holmes F		Diagnostic roent	Benson Andrew I		Roentgenology
Danville			Pittsburgh		
Hawley S J		Roentgenology *	Alley Reuben C	4900 Friendship Ave	Diagnostic roent
DuBois			Caldwell C S	520 S Aiken Ave	Diagnostic roent
Cann C W	19 E Long Ave	Roentgenology	Fisher J W	500 Penn Ave	Radiology
McCormick A F	Maple Avenue	Roentgenology	Coldsmith Maurice F	3459 5th Ave	Roentgenology *
Easton			Cordfinkell Julius	3401 5th Ave	Roentgenology
Quincy James J	209 Bushkill St	Radiology	Crier C W	500 Penn Ave	Radiology
			Crimm Homer W	500 Penn Ave	Radiology
			Jacox Harold Wm	1400 Friendship Ave	Radiology
			Johnston Zoe A	500 Penn Ave	Roentgenology
			McCullough John F	500 Penn Ave	Radiology
			McCullough Thos I	121 University Pl	Roentgenology
			Ray William B	110 F Stockton Ave	Roentgenology *

WASHINGTON

NAME	ADDRESS	TYPE OF SERVICE
Bellingham Ciley Earl T L	1155 State St	Radiology
Hogufam McCarthy E D	606 K St	Roentgenology
Longview Hayes Richard	15th Ave and Douglas St	Roentgenology
Seattle Dwyer Maurice F	1115 Terry Ave	Radiology
Exner Fredk B	509 Olive Way	Radiology
Carhart Murch N	1305 4th Ave	Radiology
Holtz Kenneth J	920 2d Ave	Roentgenology
Holtz Carl E	509 Olive St	Roentgenology
Koenig H E	1215 4th Ave	Roentgenology
Nichols J Howard	1120 21st Ave N	Roentgenology *
Stephens Lorenzo L	1215 4th Ave	Radiology
Thompson H B	1305 4th Ave	Radiology
Thomson Curtis H	1305 4th Ave	Roentgenology *
Ward Chas B	1305 4th Ave	Radiology
Spokane Aspray Joseph	407 Riverside Ave	Radiology
Betts Arthur	407 Riverside Ave	Radiology
Tacoma Fishel C R	740 St Helens Ave	Roentgenology
Walla Walla Johannesson C J	8 S 2d Ave	Roentgenology *
Yakima Cornett Geo W	102 S Naches St	Roentgenology *

WEST VIRGINIA

NAME	ADDRESS	TYPE OF SERVICE
Fairmont Francis Charles T	200 Gaston Ave	Roentgenology
Hollidays Cove Davis Geo H		Diagnostic roent
Huntington Mackenzie A R	955 4th Ave	Roentgenology *
Parkersburg Bolce Ralph Homer	717 Ann St	Roentgenology
Rose Lonzo O	807 Murdock Ave	Radiology
Wheeling Bippus E S	77 16th St	Roentgenology
Clovis C H	2000 Eoff St	Radiology
Halslip Norvell L	40 14th St	Radiology
Kalbfleisch W K	58 16th St	Roentgenology
Quimby, Will A	1401 Market St	Radiology

WISCONSIN

NAME	ADDRESS	TYPE OF SERVICE
Appleton McGrath E F	114 W College Ave	Radiology
Beloit Wilson Russell F	431 Olympian Blvd	Radiology
Eau Claire Balrd J C	401 S Barstow St	Roentgenology
Green Bay Olsted Austin O	207 E Walnut St	Radiology
Shewalter G M	305 E Walnut St	Roentgenology
Troup R L	306 Cherry St	Roentgenology
Janesville Kuegle F H	19 S Main St	Roentgenology
Kenosha Bowling Irwin E	625 57th St	Roentgenology
Solow Theodore	723 58th St	Radiology
LaCrosse McLoone J E	319 Main St	Roentgenology
Madison Ellis Ivan G	720 S Brooks St	Roentgenology
Little Lawrence V	925 Mound St	Roentgenology
Poble F A	1300 University Ave	Radiology
Sisk J Newton	16 S Henry St	Roentgenology
Marshfield Potter R P		Radium therapy
Milwaukee Altenhofen A R	152 W Wisconsin Ave	Roentgenology
Dorr A V	161 W Wisconsin Ave	Roentgenology *
Pepperson Paul S	324 E Wisconsin Ave	Roentgenology
Habbe John Edwin	231 W Wisconsin Ave	Roentgenology
Mackay F W	1545 S Layton Blvd	Diagnostic roent
Morton S A	3321 N Maryland Ave	Roentgenology
Zmyslony W P	931 W Mitchell St	Diagnostic roent
Neenah Greenwood S D		Radiology
Salem Fletcher Wm		Roentgenology
Waukesha Peterson Geo E	821 N Grand Ave	Roentgenology

WYOMING

NAME	ADDRESS	TYPE OF SERVICE
Cheyenne Conyers Chester A	1720 Carey Ave	Radiology

PHYSICIANS SPECIALIZING IN RADIOLOGY IN GOVERNMENT SERVICE

UNITED STATES ARMY

NAME	ADDRESS	TYPE OF SERVICE	NAME	ADDRESS	TYPE OF SERVICE
Bowen Albert, Maj	Station Hosp San Antonio Texas	Roentgenology	Noble Harry J Lt Comdr	U S Naval Hospital Chelsea Mass	Roentgenology *
Carroll Wm J Maj	Army and Navy Gen Hosp Hot Springs Ark	Roentgenology *	Owen John P Comdr	U S S Relief Marine Island Calif	Roentgenology
Favour R Jr Maj	Army and Navy Gen Hosp Hot Springs Ark	Roentgenology	Perry Wendell H Lt Comdr	Naval Hospital Great Lakes Ill	Roentgenology
Crady Henry W Maj	Fitzsimons Gen Hosp Denver Colo	Roentgenology *	Pinner Wm F Lt	U S Naval Hospital Bremerton Wash	Roentgenology
Kellogg D S Capt	Station Hosp Schofield Barracks Hawaii	Roentgenology *	Ralston T W Capt	Naval Medical Supply De pot Mare Island Calif	Radiology
Jones R H Jr Maj	Sternberg Gen Hosp Manila I	Roentgenology	Spalding Otis B Lt Comdr	U S Naval Hospital San Diego Calif	Roentgenology *
McCaw Wm W Maj	Army Med School Army Medical Center Washin ton D C	Roentgenology *	Stowe Irving I Lt Comdr	U S Naval Hospital Portsmouth N H	Roentgenology *
Moore H C Maj	Hdqts 9th Corps Area Pre sidio of San Francisco San Francisco Calif	Roentgenology	Whitehead Lily L Lt Comdr	U S Naval Hospital Brooklyn N Y	Roentgenology *
Moore John J Maj	Letterman Gen Hosp San Francisco Calif	Roentgenology *	Whitmore Wm H Lt Comdr	U S Naval Hospital Canacao Cavite P I	Roentgenology

UNITED STATES NAVY

NAME	ADDRESS	TYPE OF SERVICE
Farrior John B Lt Comdr	Naval Hospital, Annapolis Md	Roentgenology
Fort Walter A Lt Comdr	U S Naval Hospital Marine Island Calif	Roentgenology *
Hayworth R W Lt Comdr	U S Naval Hospital Washington D C	Roentgenology *
Hutchinson R W Lt Comdr	Naval Medical School Washington D C	Roentgenology
Jacobs Irving W Comdr	U S Naval Hospital Brooklyn N Y	Roentgenology *
Keener Harry A Lt Comdr	U S Naval Hospital Marine Island Calif	Diagnostic roent
Larson Gilbert H Lt Comdr	U S Naval Hospital Philadelphia Pa	Roentgenology *
Maher Paul P Lt Comdr	U S Naval Hospital Pearl Harbor Hawaii	Roentgenology *
Muller F W Lt Comdr	U S Naval Medical Supply Depot Brooklyn N Y	Roentgenology *

UNITED STATES PUBLIC HEALTH SERVICE

NAME	ADDRESS	TYPE OF SERVICE
Booth J H R	U S Marine Hospital Baltimore Md	Roentgenology *
Mayoral Antonio	U S Marine Hospital New Orleans La	Roentgenology

VETERANS ADMINISTRATION

NAME	ADDRESS	TYPE OF SERVICE
Berudet E A	Ipsmore Calif	Diagnostic roent
Frank C Harold	Milwaukee Wis	Diagnostic roent
Clickman L Grant	Minneapolis Minn	Roentgenology *
Griswold Charles M	Danville Ill	Diagnostic roent
Hynes Wm P	2600 Wisconsin Ave N W Washington D C	Radiology
McClanahan C W	West Los Angeles Calif	Radiology
Minehart A L	130 W Kingsbridge Rd New York City	Radiology
Mosness B A	Northampton Mass	Roentgenology
Murray R S E	Lyons N J	Roentgenology *
Nather Frederick B	Veterans Adm For Legion Texas	Diagnostic roent
Shawhan Rezin C	Oteen N C	Diagnostic roent

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SATURDAY, FEBRUARY 22, 1936

SENSITIVENESS AND RESISTANCE TO ROENTGEN RAYS OR RADIUM

Physicians who are not well versed in radiology often consider radiosensitiveness and radioresistance as absolute expressions. To them a tumor is either sensitive or resistant to irradiation, and intermediate gradations are not recognized. Experienced radiologists use these terms only in a relative sense. Just as different varieties of normal cells vary greatly in sensitiveness to roentgen rays or radium, tumors vary equally in this respect. It has been established that the radiosensitiveness of any tumor corresponds to that of the cells of which it is chiefly composed. The scale of radiosensitiveness of different varieties of neoplasms must, and does in fact correspond to the degree of sensitiveness of its essential cellular constituents. In other words, the scale of radiosensitiveness of different varieties of tumor corresponds to the scale of sensitiveness of the different varieties of normal cells.

The normal lymphocytes are the most sensitive of all cells to irradiation. Tumors composed mainly of lymphocytes are most sensitive to roentgen rays or radium. The sensitiveness of embryonal carcinoma of the kidney or testis is slightly less than that of lymphoid tumors. Next in relative sensitiveness comes endothelioma or endothelial myeloma of bone. At the opposite end of the scale of sensitiveness to irradiation must be placed tumors derived from nerve cells or from myxomatous tissue. In the case of a mixed tumor, sensitiveness to irradiation represents a composite of its cellular elements, when sensitive cells predominate, the degree of sensitiveness is greater than when the proportion of sensitive cells is small. Thus between maximum sensitiveness and maximum resistance there are numerous gradations. Therefore to speak or to write of a tumor as sensitive or resistant to irradiation, without qualification to indicate the grade or relative degree of these qualities, is to mislead others into assuming that a tumor is either 100 per cent sensitive or 100 per cent resistant. Just as a mixture of different proportions of red and white may yield innumerable intermediate shades of color so many different

varieties of tumor exhibit varying degrees of sensitiveness or resistance according to the relative proportion of sensitive and resistant cells which they contain.

In estimating the relative sensitiveness of any tumor, two principal factors must be considered: the rate of regression and the scheme of irradiation. The significance of the first factor rests entirely on the second factor. One tumor may retrogress completely in two or three weeks, regression of another tumor may require two or three months; a third growth may not disappear completely, however prolonged the treatment may be or may not be perceptibly influenced. Examples include lymphoblastoma, endothelioma of bone, osteogenic sarcoma and myxosarcoma.

The rate of regression of a new growth cannot well be compared with that of another unless the scheme of irradiation is approximately the same. This refers not only to the quantity and quality of rays to which the affected region has been exposed but also and perhaps even more to the arrangement of the fields of irradiation and the direction of the several beams of rays in relation to the tumor.

Another general statement often made is that neoplasms corresponding to grades 3 and 4 of Broders' scale of malignancy are radiosensitive, while neoplasms corresponding to grades 1 and 2 are resistant to irradiation. This represents a conclusion drawn from purely pathologic premises, its validity is at least doubtful. It represents a half truth which takes into account only a part of the equation. In this connection it is essential to remember that histopathologic structure and cellular radiosensitiveness are different bases which do not necessarily have anything in common. The one rests on the visual appearance of cells and the architectural arrangement of tissues, while the other rests on the innate sensitiveness of cells to roentgen rays or radium. In a general way it is true that the more malignant the tumor the more sensitive it is likely to be, but to deduce that only tumors with a malignancy corresponding to grades 3 and 4 of Broders' scale should be irradiated is to draw altogether too broad a conclusion.

FIRST AID TREATMENT OF FRACTURES

The emergency treatment of fractures of the long bones has become a problem of major importance. Scattered along the highways of the nation each year are more than a million persons injured by automobile accidents, and in the homes of the nation there are more than four million additional persons injured. Many of these are suffering from fractures of the long bones. About 300,000 fractures of the extremities occur annually in this country. In comparison with the number of injured in the American forces during the World War, the annual number of peace time injuries is gigantic. The first aid treatment of this vast number of injured persons, particularly those who have fractured bones, will largely determine in many cases the amount of pain, the length of their stay in the hospital.

and to some extent whether or not they are permanently disabled. The first attendant to practically all these injured persons naturally will be laymen untrained in the care of fractures. Their first thought will be to lift and carry the victim, with perhaps his broken extremity dangling, to some place more comfortable than the roadside. As regards the eventual result to fractured limbs, this is the worst thing that could be done. The immediate effects will be additional injury by the jagged bones to nerves, blood vessels and muscles. The broken bones may thus be forced through the skin, creating a compound fracture and tremendously increasing the risk of infection and the danger to life. Injured persons with broken bones should first have a splint properly applied to the extremity before they are moved.

The Cooperative Committee on Fractures of the Section on Surgery, General and Abdominal and the Section on Orthopedic Surgery of the American Medical Association has prepared in cooperation with the Department of Scientific Exhibit a Primer on Fractures in which the principles of the modern treatment of fractures are illustrated and discussed. The Cooperative Committee on Fractures also will reestablish at the Kansas City session of the American Medical Association in May the fracture exhibit, which for several years attracted the attention of thousands of physicians in attendance at the annual meetings.

Proper instruction in the first aid treatment of fractures is of increasing importance. A campaign of instruction is under way throughout the country by such organizations as the Red Cross, the Girl and Boy Scouts, nurses organizations and many large industrial groups. The leadership in the teaching of first aid is naturally in the medical profession. Medical practitioners must therefore become proficient in giving and teaching first aid. Medical schools are insisting and the groups established for graduate instruction must demand that students possess the ability to apply emergency fixed traction splints. The teaching of first aid today is different from the old-fashioned attempts to teach the simple application of a folded handkerchief bandage. Cities are passing ordinances to require ambulances, police cars and other conveyances to carry first aid splints.

An official history of the war¹ said

It has always been recognized that the fixation of the broken bone at the earliest possible moment after the injury is important but it was not until 1915 that it became clearly recognized how much the subsequent satisfactory progress of any case of gunshot fracture depended on efficient splinting prior to transport. The appreciation of this fact was chiefly due to the demonstration afforded by the use of the Thomas knee-splint in the treatment of fractures of the femur. Fractures of this class were in the early days of the war, fixed in the forward area by some splint of the long outside type. Mortality among patients so treated was extraordinarily high and those cases which recovered were almost all subject to severe infections and a prolonged convalescence. After the general introduction in the forward areas of the Thomas splint for the treatment of this fracture the improvement in results was too great not

to attract attention. Apart from any advance which had been effected in wound treatment in general, it was clearly shown that an apparatus which fixed a fracture was able largely to prevent shock and to reduce the incidence of infection in the wound.

According to Dr. Kellogg Speed, chairman of the Cooperative Committee on Fractures the World War¹ furnished proof of the reduction in mortality in major open fractures from 80 per cent to 20 per cent, with the help of this means of transportation. The principles of the Thomas splint remain sound and some modifications have also been found acceptable. The day will probably come when every public vehicle and every doctor's car will carry the proper splints for fixed traction in first aid transportation.

COPPER AND PIGMENTATION OF SKIN AND HAIR

Pronounced changes occur in the color of the fur of black or "hooded" rats that consume an exclusive milk diet low in copper.¹ A progressive decrease in the amount of pigmentation occurred as the dietary regimen continued until finally the coat became a silvery gray. The administration of iron to the animals had no effect on the condition, but the feeding of a small amount of copper promoted a prompt restoration of the normal color to the fur. Almost simultaneously, another investigator demonstrated by actual analyses that the copper content of the skin of black rats and rabbits usually exceeded that of otherwise comparable white animals. Further studies suggested that copper might serve as a catalyst in the formation of pigment. Copper it was shown, markedly accelerated the oxidation of dopa '1-3-4-dihydroxyphenylalanine by dopa oxidase, an enzyme present in the skin of young animals forming a dark pigment. Even in the absence of the enzyme the oxidation was catalyzed by copper to some extent.

Recent investigations have confirmed and extended these observations. A Japanese investigator² has demonstrated that the copper content of black skin and hair is somewhat greater than that of brown skin and hair which in turn exceeds white skin and hair in this respect. This relationship held even in instances in which skin and hair varying in degree of pigmentation were taken from different areas of the same animal. It was also found that amounts of copper as small as 0.05 microgram catalyzed the *in vitro* oxidation of dopa to a dark colored pigment.

Gorter⁴ likewise relates copper to the pigmentation of skin and hair. Striking depigmentation of the fur

1 Keil H. L. and Nelson V. E. The Role of Copper in Hemoglobin Regeneration and in Reproduction, *J. Biol. Chem.* **91**: 49 (Sept.) 1931.

2 Cunningham I. J. Some Biochemical and Physiological Aspects of Copper in Animal Nutrition *Biochem. J.* **25**: 1267 (No. 4) 1931.

3 Sarata U. Studies in the Biochemistry of Copper. XI. Copper and Pigmentation of Skin and Hair *Japanese J. Med. Sci. Hyg.* **11**: 379 (Nov.) 1935.

4 Gorter I. J. Depigmentation a New Dietary Deficiency Disease Cured by Copper *Nature* **136**: 185 1935.

1 History of the Great War. London: His Majesty's Stationery Office. 1919-1922.

of cats, rabbits and rats was produced by dietary means and the condition was specifically cured by copper. A number of other inorganic elements, tested either alone or in various combinations, and certain vitamins were inert as remedial agents. While further work must be done before conclusions are drawn, these observations strongly suggest that copper may be related, perhaps as a catalyst, to the formation of pigment in the skin and hair of mammals.

Current Comment

CERTIFICATION OF RADIOLOGISTS

At the Minneapolis session of the American Medical Association in 1928 the House of Delegates assigned to the Council on Medical Education and Hospitals the work of preparing a list of acceptable radiologic laboratories and departments of radiology. This was in response to requests from the sections on radiology of several medical societies for a supervision similar to that already established over clinical laboratories. Since greatest emphasis was placed on the qualifications of radiologists in charge of such laboratories, "Essentials for Admission to List of Physicians Specializing in Radiology" were formulated and were adopted by the House of Delegates. This provided a basis for the Council's list of radiologists. The list was first published in *THE JOURNAL* in 1931, the sixth and final publication of the list containing 1286 names, appears elsewhere in this issue. The local advisory committees of radiologists played an important part in developing the Council's list. The regular publication of the list since 1931 has been a great influence in advancing the specialty of radiology to the position in scientific medicine it now occupies. Physicians everywhere have been encouraged to refer their work to medical graduates recognized as specialists in this field. There is evidence that independent lay practitioners have been effectively curbed. The principles proclaimed in the "Essentials for Admission to List of Physicians Specializing in Radiology" and otherwise have been an educational force, and they have confirmed the fact that the practice of radiology is the practice of medicine. The American Board of Radiology, which was established in 1933, conducted its first examinations at Cleveland in 1934. The board at present is composed of the following doctors of medicine: H. K. Pancoast, Philadelphia, president; A. C. Christie, Washington, D. C., vice president; E. C. Ernst, St. Louis; G. W. Holmes, Boston; E. L. Jenkinson, Chicago; L. C. Kinney, San Diego; Calif., W. F. Manges, Philadelphia; L. J. Menville, New Orleans; J. W. Pierson, Baltimore; L. R. Sante, St. Louis; Henry Schmitz, Chicago; Albert Soiland, Los Angeles; M. C. Sosman, Boston; R. H. Stevens, Detroit; and B. R. Kirklin, Rochester, Minn., secretary-treasurer, to whom applications should be directed. The Council on Medical Education and Hospitals of the American Medical Association officially extended its recognition to this board, Dec. 9, 1935.

Therefore the list of diplomates of the American Board of Radiology will henceforth take the place of the Council's list of radiologists.

DETECTION OF ENDEMIC FLUOROSIS

The remarkable development of knowledge concerning the role of fluorine in causing mottled enamel has been previously discussed in these columns.¹ Definite evidence now exists associating the presence of fluoride in drinking water with the endemic hypoplasia of the permanent teeth known as mottled enamel. It is important therefore to determine what constitutes a non-injurious amount of fluoride in a domestic water supply. Any attempts to arrest the further development of this disease are obviously based on definite information concerning the permissible maximum or minimum threshold values for the fluorine content of the water regularly consumed. For public health purposes it is important to establish an arbitrary minimal threshold of fluoride concentration in domestic water supplies so that data obtained in various localities may be related to this norm. The minimal threshold of fluoride concentration has been defined by the United States Public Health Service laboratories as the highest concentration of fluoride incapable of producing a definite degree of mottled enamel in as much as 10 per cent of the group examined.² The group studied should consist of at least twenty-five children and is restricted, in general, to children 9 years of age or older who, since birth, have continuously used the water under investigation for both drinking and cooking. A community is given a "negative" mottled enamel index when less than 10 per cent of the children show "very mild" or more severe types of mottled enamel. With these useful criteria, studies have already been made of endemic fluorosis in eleven cities, six where mottled enamel was known to be endemic and five in which comparable conditions existed but without evidence of the typical dental defects in the population and which served as "controls." Owing to the fluctuating content of fluoride in certain municipal water supplies, caution should be exercised in correlating clinical observations with a single chemical determination of fluoride in the water. Furthermore, care must be taken in obtaining the full details of the case histories, as continuous residence in the suspected regions is of great importance in eliciting the abnormalities in the dental structures. On the basis of the foregoing combination of criteria, two municipalities in Illinois with a mean annual fluoride content of 17 and 18 parts per million in the water, and one city in Colorado with 25 parts per million were given a mottled enamel index of "slight," whereas one city in Colorado with 0.6 part per million was listed as "negative." The interesting results and relationships derived from these studies and the application of this method of approach to other regions of this country will undoubtedly provide valuable information regarding endemic fluorosis and indicate the localities in which it is necessary to remove toxic quantities of fluorides from the drinking water.

¹ Mottled Enamel editorial *J. A. M. A.* **100** 189 (Jan. 21) 1933.
The Oakley Experiment on Mottled Enamel *ibid.* **101** 214 (July 15) 1933.
² Dean H. T. and Elvove Elias *Pub. Health Rep.* **50** 1719 (Dec. 6) 1935.

Association News

RADIO BROADCASTS

The American Medical Association broadcasts over WEAF, the Red network instead of the Blue, as formerly, and certain additional stations of the National Broadcasting Company at 5 p m eastern standard time (4 o'clock central standard time, 3 o'clock mountain time 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met" The title of the program is "Your Health" The program is recognizable by a musical salutation through which the voice of the announcer offers the toast "Ladies and gentlemen your health" The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night for the promotion of the health of the people Each program will include a brief talk dealing with the central theme of the individual broadcast

Red Network¹—The stations on the Red network of the National Broadcasting Company are WEAF, WEEL, WTIC, WJAR, WTAG, WCSH, KYW, WFBR, WRC, WGY, WBEN, WCAE, WTAM, WWJ, WMAQ, KSD, WHO, WOW, WDAF

Pacific Network¹—The stations on the Pacific network are KGO, KPO, KFI, KGW, KOMO, KHQ, KFSD, KTAR

The next three programs are as follows

February 25	Crippled Children	W W Bauer, M D
March 3	Cancer	W W Bauer M D
March 10	Hard of Hearing	Morris Fishbein M D

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES NEW HOSPITALS EDUCATION PUBLIC HEALTH ETC)

ALABAMA

Society News—Dr Beverly Douglas, Nashville, Tenn, addressed the Tuscaloosa County Medical Society and medical students at the University of Alabama, February 3, on "Recent Advances in Treatment of Common Wounds and Wound Infection"

Personal—Dr Robert E Harper for ten years health officer of Lawrence County, has resigned to accept a similar position in Colbert County, with headquarters at Tusculumbia —Dr Paul M Thompson formerly of Spartanburg, S C, has been appointed health officer of the recently created health unit in Henry County

CALIFORNIA

Lectures on Mental Health—Dr Frankwood E Williams, formerly medical director of the National Committee for Mental Hygiene, New York, is to give a series of four lectures on "Mental Health and Social Forces" February 24, 25, 26 and 28, at the Figueroa Playhouse, Los Angeles

Hospital News—Dr Stanley Cobb Bullard professor of neuropathology, Harvard Medical School, Boston discussed "Epilepsy and the Convulsive State" at the University of California Hospital, San Francisco February 8 Dr Willis C Campbell, professor of orthopedic surgery, University of Tennessee College of Medicine Memphis gave a lecture February 4 on "Surgical Disorders of the Knee"

Outbreak of Influenza—A mild type of influenza resulted in the closing of three schools in the Los Angeles area and a quarantine of Juvenile Hall police detention home for minors the Chicago Tribune reported February 16 More than 100 children and thirteen staff members were reported ill at the

¹ Network programs are broadcast locally or rejected at the discretion of the local station The lists indicate stations to which programs are available

institution Whittier High School, Antelope Valley High School and Norwalk Grammar School were closed

Society News—Dr Roger Anderson, Seattle, will address the Alameda County Medical Association, March 5, on "Fractures of the Upper and Lower Extremities" A symposium on diseases of the thyroid gland was presented before the society, February 17, by Drs Paul P E Michael, George E Nesche and Frank H Bowles Oakland—Dr Arthur B Cecil, Los Angeles, addressed the San Diego County Medical Society, February 11, on "Deformities of the Male Urethra"

CONNECTICUT

Dr Phelps Retires as Professor—Dr Winthrop M Phelps will retire in June from Yale University School of Medicine, New Haven, as professor of orthopedic surgery and become a clinical professor, devoting only part time to the medical school, the New York Times reported February 8 Dr Phelps graduated from Johns Hopkins University School of Medicine, Baltimore, in 1920 He has been a professor at Yale since 1932 and a member of the faculty since 1925

Society News—Dr Albert Buck, superintendent of New Haven Hospital, was elected president of the Connecticut Hospital Association at the recent annual meeting—Dr Bernardo A Houssay, professor of physiology and director of the Institute of Physiology, National University of Buenos Aires, addressed a special meeting of the Yale Medical Society, New Haven, January 18, on "The Hypophysis and Carbohydrate Metabolism" Speakers before the society, February 12, included Charles-Edward A Winslow, Dr P H, Lovic P Herrington Jr, Ph D, and A P Gage on "Measurement of Thermal Interchanges Between the Body and Its Environment by Differential Calorimetry" Drs Monroe D Eaton, "The Nature of Diphtheria Toxin", Ashley W Oughterson "Spinal Cord Level of Preganglionic Fibers in Relation to Horner's Syndrome", and Edwin F Gildea and Evelyn B Man, Ph D, "The Relation Between Blood Lipoids and Body Build"

DISTRICT OF COLUMBIA

Medical Bills in Congress—S 3514 has been reported to the Senate, with amendment proposing to regulate the manufacture, dispensing, sale and possession of narcotic drugs in the District of Columbia (S Rept 1538) H R 8437 has been reported to the Senate, without amendment, directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to Dr Arthur B Walker

Health at Washington—Telegraphic reports to the U S Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended February 8, indicate that the highest mortality rate (231) was for Washington and for the group of cities as a whole, 134 The mortality rate for Washington for the corresponding period last year was 164, and for the group of cities, 131 The annual rate for eighty-six cities for the six weeks of 1936 was 134 as against a rate of 131 for the corresponding period of the previous year Caution should be used in the interpretation of these weekly figures, as they fluctuate widely The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate

Society News—The Medical Society of the District of Columbia was addressed, February 12 by Drs Panigotes S Constantinople on "Chronic Otitis Media", Harry S Bernton "The Common Cold and Asthma," and Elizabeth Parker and Harry S Douglas, "Acromegaly" A symposium on cardiac pain was presented before the society, February 19, by Drs Louis Hamman, Baltimore, Earl A Martin and Joseph Duerston Stout Dr Alfred L Abrams will present a paper February 26, entitled "Epidemic Poliomyelitis in Washington Clinical Survey with Emphasis on Diagnostic Features," and Dr Earl B McKinley, "The Geography of Disease"—Dr Robert A Wilson Brooklyn, discussed "A Study of the Asphyxia and Early Respirations of the New-Born" before the Washington Gynecological Society, January 25

ILLINOIS

Society News—Speakers at the quarterly meeting of the Henry County Medical Society in Cambridge, February 13 were Drs Ford K Hick and Charles M McKenna, both of Chicago, on pneumonia and prostatitis, respectively —At a meeting of the Perry County Medical Society in DuQuoin, February 6, Drs Quitman U Newell and Oswald P J Talk, St Louis, discussed cancer and cardiovascular diseases —Dr Frederick G Dvas Chicago, discussed gonorrhea before the DuPage County Medical Society in Elmhurst, January 15

Chicago

Dr Abt Donates Library to Medical School—Dr Isaac A. Abt, professor of pediatrics, Northwestern University School of Medicine, has presented his library on the diseases of children, collected over a period of forty years, to Northwestern. The collection comprises 3,500 volumes and is valued at approximately \$25,000.

Chicago Medical Society Endorses Dr. Humiston—The council of the Chicago Medical Society, February 11, adopted a resolution endorsing Dr. Charles E. Humiston as candidate for president-elect of the American Medical Association. The resolution reads as follows:

WHEREAS The Illinois State Medical Society through its Council by unanimous vote has endorsed Dr. Charles E. Humiston as candidate for President Elect of the American Medical Association and instructed its Delegates to urge his election at the Kansas City meeting therefore be it

Resolved By the Council of the Chicago Medical Society in regular meeting assembled that said action of the Illinois State Medical Society in recognizing the superior qualifications of our distinguished fellow member for the high office of President of the American Medical Association be and hereby is commended approved and endorsed.

Supreme Court Holds Corporate Practice of Medicine Illegal—The Supreme Court of Illinois February 14 in *People v. United Medical Service Inc.* held that a corporation cannot legally practice medicine in Illinois even though it attempts to do so through physician employees. It accordingly affirmed a judgment rendered by Judge M. L. McKinley of the Superior Court, Cook County, March 1935 ousting the United Medical Service Corporation from the franchise occupation and business of engaging in the diagnosis and treatment of human ailments. According to the *Chicago Tribune* February 15, an attempt will be made to reorganize the corporation on a partnership basis, in the hope of avoiding legal difficulties. It is intimated, however, that before attempting such a reorganization the corporation may ask for a rehearing from the Supreme Court of Illinois and appeal if possible, to the Supreme Court of the United States.

Society News—Speakers before the Chicago Medical Society, February 8 were Drs. Harry Culver on *Borderline Problems in Diagnostic Urology*, Joseph S. Eisenstaedt on *Bladder Tumors*, and Herman L. Kretschmer, *Transurethral Resection in Various Types of Bladder-Neck Obstruction*.

—At a meeting of the Chicago Pathological Society, February 10 Francis B. Gordon and Dan H. Campbell, department of bacteriology, University of Chicago, among others were the speakers on *Active and Passive Immunity in Experimental Poliomyelitis and Antigenic Polysaccharides from Helminths*, respectively. —The Chicago Roentgen Society was addressed, February 13, by Drs. Alfred E. Jones and Philip Rosenblum on *Foreign Bodies in the Genito-Urinary Tract*, and Warren W. Furey, *Intestinal Obstruction as a Roentgenological Problem*. —Dr. Robert D. Schrock, Omaha, discussed *Treatment of Sprengel's Deformity*, and *Immediate Bone Grafting Following Resection of Benign Bone Tumors* at a meeting of the Chicago Orthopedic Society, February 14. Dr. Samuel J. Lang discussed *The Mechanics of the Back and Its Relation to Backache*. —Among others Dr. Edward V. L. Brown addressed the Chicago Ophthalmological Society, February 17, on *The Apparent Increase of Hyperopia Before Nine Years of Age*. —A symposium on *contact dermatitis* was presented before the Chicago Society of Allergy, February 17 by Drs. Samuel J. Zakon, Chicago; Louis A. Brunsting, Rochester, Minn.; and Carliss Malone, St. Louis.

INDIANA

Society News—Dr. James B. Shoemaker, Miami, addressed the Miami County Medical Society in Peru, January 31 on *'Protein Therapy'*. —Speakers before the Madison County Medical Society, Anderson, February 17 included Drs. Sam W. Litzenberger, on *Hormone Treatment of Prostatic Hypertrophy*, Otis A. Kopp, *Overtreatment of Syphilis*, Rex W. Dixon, *'Systemic Allergic Reactions'* and Archie D. Erehart, *'Smus Infections or Nasal Allergy'*.

State Board Re-elected—The Indiana State Board of Medical Registration and Examination re-elected all officers at the annual meeting in January. Dr. Jesse W. Bowers, Fort Wayne, president; Dr. Leslie C. Sammons, Shelbyville, vice president; Dr. William R. Davidson, Evansville, secretary; and Cecil J. Van Tilburg, D.C., Indianapolis, treasurer. Other members of the board are E. O. Peterson, D.O., La Porte; Dr. Norris E. Harold, Indianapolis; and Dr. Franklin S. Crockett, La Grange.

New Medical School Building—The *Journal of the Indiana State Medical Association* announces that a new medical school building will be constructed on the Bloomington campus of Indiana University to be erected as a federal project

at the university at a cost of \$471,000. It will be named the James William Fesler building in honor of the president of the board of trustees of the university, in recognition of his services as a member of the board since 1902 and president since 1919.

MARYLAND

Curative Workshop—Occupational therapy has recently been made available to outpatients at the University Hospital, University of Maryland, Baltimore, through the opening in the dispensary of a curative workshop, under the auspices of the Junior League of Baltimore. Suitable equipment has been installed. The department is under the direction of Miss Sue Hurt, a graduate of the Philadelphia School of Occupational Therapy.

Dr. Lomas Honored—A banquet was held in honor of Dr. Arthur J. Lomas, superintendent of the University Hospital, Baltimore, at the Southern Hotel, January 7, as a tribute to his efforts in erecting the new hospital building. Dr. William H. Toulson acted as toastmaster. The speakers included Mr. H. C. Byrd, acting president of the University of Maryland, Dr. James M. H. Rowland, dean of the medical school, and Dr. Arthur M. Shipley, who presented Dr. Lomas with a token of esteem.

Memorial to Dr. Ruhrah—A memorial room was opened in the building of the Medical and Chirurgical Faculty of Maryland, January 21, in honor of the late Dr. John Ruhrah, Baltimore. The room was furnished by friends of Dr. Ruhrah principally outside the medical profession, and it is hoped ultimately to make this room a replica of the one in which he lived and worked for the last twenty-five years of his life. Many of his own books have been placed in the room, which will be formally dedicated at the annual meeting of the faculty in April. The opening of the room was a feature of the meeting of the Osler Historical Society. Dr. Sanford V. Larkey, librarian, Welch Medical Library, Johns Hopkins University, spoke on *Children and Witches*, and Dr. John Rathbone Oliver presented *An Unpublished Autograph Letter of Dr. John Crawford*. Dr. Ruhrah, who died March 10, 1935, provided in his will that most of his estate will eventually go to the faculty. Among other positions he was professor of pediatrics at the University of Maryland School of Medicine, president of the American Pediatric Society, American Academy of Pediatrics, and the Medical and Chirurgical Faculty of Maryland, president and secretary-treasurer of the Medical Library Association and president of the Research Society of the Osler Historical Society.

MASSACHUSETTS

Personal—A testimonial dinner was given to Dr. Henry M. Pollock, superintendent Massachusetts Memorial Hospitals, at the Parker House, January 30 by about 300 associates and friends of the Massachusetts Memorial Hospitals. Dr. Pollock is an associate commissioner of the department of mental diseases. —Drs. Austen T. Riggs and Charles H. Kimberly have been appointed to the staff of the Williams College health department, Williamstown.

British Physician to Lecture at Harvard—Sir Fredrick Gowland Hopkins, Sir William Dunn, professor of biochemistry at the University of Cambridge, England, and since 1914 professor of biochemistry, has been appointed to the Harvard faculty for the academic year beginning next September. As the Edward K. Dunham annual lecturer, he will deliver a series of lectures in the medical school. The Dunham foundation was established in 1923 for the promotion of the medical sciences. Holders of the lectureship are drawn chiefly from among the leaders of foreign medical research. The Nobel Prize in medicine was conferred on Sir Frederick in 1929.

Free Public Lectures—The faculty of Harvard Medical School began a series of free public lectures on medical subjects January 5, when Dr. Daniel F. Jones discussed *Cancer Lectures* to be given in the future will be:

Dr. Henry Jackson Jr., February 23, *Role of the White Blood Cells in Health and Disease*.
Dr. Reginald Fitz and Dr. Elliott C. Cutler, March 1, *Appendicitis*.
Dr. William B. Castle, March 8, *Vitamins*.
Dr. Hallowell Davis, March 15, *Hearing and Its Conservation*.
Dr. Herbert L. Lombard, March 22, *Chronic Disease at the Cross Roads*.

Other lectures in the series were given by Drs. John H. Blum, *Cosmetics—Safe and Dangerous*; Harold C. Stuart, *Prevention of Infectious Diseases*; William L. Aycock, *'Infantile Paralysis'*; Leroy M. S. Miner, *Prevention and Treatment of Physical Diseases of the Mouth*; Francis C. Hall, *Gout and Allied Conditions*; and William H. Robey, *The Prospect of Keeping a Good Heart*.

MICHIGAN

State Society Night—Several county medical societies in Michigan have adopted the plan of designating one of their meetings "state society night" when officers of the state society are guests of honor and participate in the program. The Jackson County Medical Society devoted its meeting January 21, to this program, Muskegon County, January 31, and Genesee County, February 19. Wayne County plans its "state society night" for some time in March.

Graduate Conferences—Graduate conferences are being held each Wednesday morning during February at the Herman Kiefer Hospital, Detroit, under the auspices of the joint committee of the Wayne County Medical Society, the Detroit Tuberculosis Sanatorium and the department of health. Topics have been the pathology of tuberculosis and scarlet fever, February 5, preventive measures in tuberculosis and whooping cough, February 12, diagnosis (childhood and adult tuberculosis) and diphtheria, February 19. Differential diagnosis of tuberculosis and anterior poliomyelitis will be the subject, February 26.

Personal—Dr Vladimir K Volk has resigned as deputy health commissioner of Oakland County to become health officer of Saginaw County, he is a past president of the Oakland County Public Health Association. A farewell dinner was given in his honor, January 29.—Dr Howard H Cummings, Ann Arbor, has been made assistant director of graduate medical education at the University of Michigan Medical School, Ann Arbor.—A testimonial dinner was given in honor of Dr Arthur O Hart, St Johns, January 21, by members of the staff of Clinton Memorial Hospital and others. An inscribed scroll was presented to Dr Hart expressing appreciation of his many years' service in the community.

MINNESOTA

Barber Wanted for Forgery—Olaf Edwardson, a barber is wanted by the Minneapolis police for forgery according to *Minnesota Medicine*. He is said to have imposed on a number of physicians throughout the state. He is described as 40 years of age, 5 feet 7 inches tall, weighing 155 pounds, he has medium dark chestnut hair, medium dark blue eyes, medium complexion, is bald and is of Norwegian descent.

Dr Mann to Give Judd Lecture—The third annual lecture in the E Starr Judd Lectureship in Surgery, established at the University of Minnesota by the late Dr Judd, will be given by Dr Frank C Mann, professor of pathologic surgery and experimental physiology, Mayo Foundation, March 17, in the Music Auditorium on the university campus in Minneapolis. The lecture will be entitled "Hepatic Physiology and Pathology from the Surgical Viewpoint. A Review of Experimental Investigations."

Society News—Dr Frank H Lahey, Boston, addressed the Minneapolis Surgical Society, February 6, at its fourteenth annual foundation dinner, his subject was "The Surgery of Carcinoma of the Colon and Rectum." Honorary membership was given to Drs William J and Charles H Mayo, Rochester, at this meeting.—Dr Robert D Mussey, Rochester, presented a paper before the Minnesota Academy of Medicine in St Paul, February 12, on "Relation of Retinal Changes to the Severity of the Acute Toxic Hypertensive Syndrome of Pregnancy," and Dr Arthur W Ide, Rupture of the Bowel from Compressed Air.—The Minnesota Hospital Association will hold its annual session at the Lowry Hotel, St Paul, May 14-16.—Dr Charles H Watkins, Rochester, addressed the annual meeting of the Winona County Medical Society in January on "Diagnosis and Treatment of Anemia."

MISSISSIPPI

Bills Introduced—S 223 and H 213 propose to create a state hospital commission to allocate and disburse such funds as may be appropriated by the state for the hospitalization of indigent sick. This commission is to be authorized to prescribe the conditions under which hospitals may receive state appropriations and to regulate the operation of such hospitals.

NEBRASKA

Society News—Dr Robert S Dinsmore, Jr, Cleveland, gave an address before the Omaha Douglas County Medical Society, Omaha, February 11, entitled "Rescue of the Thyroid Problem." At a joint meeting of the society with the Omaha District Dental Society, February 25, speakers will be Arthur C Wherry, DDS, Salt Lake City, on "A Recent Study of Health Insurance in Europe," and Mr M C Smith, Curtis, executive secretary of the Nebraska State Medical Association,

on "The Future of the Practice of Medicine."—The third councilor district of the Nebraska State Medical Association held a meeting in Beatrice, January 23, with the following speakers: Dr Abram E Bennett, Omaha, "Present Status of Fever Therapy," Dr Ernest L MacQuiddy, Omaha, "Mold Simulating Common Infections," Dr Earl C Sage, Omaha, gave a lecture on "The Mechanism of Labor."—Dr Bert W Pyle discussed fractures at a meeting of the Dawson County Medical Society, Gothenburg, January 6.—Dr Leo I Hombach, North Platte, addressed the Lincoln County Medical Society, North Platte, January 9, on "Sinus Infections."—The Garden Keith Perkins Counties Medical Society was recently organized with Dr Firman M Bell, Grant, as president and Herbert A Blackstone, Jewellen, secretary.

NEW YORK

Medal in Ophthalmology—The University of Buffalo gold medal is awarded annually to the author of a work in ophthalmology. Details may be obtained from Dr Harold W Cowper, 543 Franklin Street, Buffalo.

Society News—Dr Alexander Marble, Boston, addressed the Medical Society of the County of Westchester, White Plains, February 18, on "Practical Points in the Treatment of Diabetes in Hospital and Home."—Dr Edgar M Neptune, Syracuse, among others, addressed the Onondaga Medical Society, February 4, on carcinoma of the colon.—Dr Josephine B Neal, New York, addressed the Medical Society of the County of Nassau, January 28, on "Diagnosis and Treatment of Meningococcic Meningitis."

Bills Introduced—S 867, to amend the pharmacy practice act, proposes that the provisions of the act shall not apply "to the manufacture of proprietary medicines except those which are poisonous, deleterious and/or habit forming." S 829 proposes to grant to physicians, nurses and hospitals supported in whole or in part by charity, treating persons injured through the fault of others, liens on any judgments, settlements or compromises obtained by the injured persons by reason of their injuries. S 830 and A 963 propose to accord to hospitals supported in whole or in part by charity and treating persons injured through the fault of others liens on all judgments, settlements or compromises accruing to the injured persons by reason of their injuries.

New York City

Afternoon Lectures at the Academy—The series of Friday afternoon lectures at the New York Academy of Lectures will be as follows for the remainder of the season:

Dr Irving S Wright	Diagnosis and Treatment of Peripheral Vascular Disease	March 6	
Dr Nathan Rosenthal	Hematology	Etiology	Special Reference to
Dr Foster Kennedy	Central Nervous System		of Syphilis of the
Dr Abraham I Garbat	Ambulatory Treatment of Peptic Ulcer	March 27	
Dr Gregory Schwartzman	Recent Advances in Treatment of Bacterial Infections	April 3	

Chest Examinations of School Children—Roentgenograms will be taken of students in the fourth, fifth, sixth and seventh terms of the twenty-two high schools in Brooklyn in a joint undertaking by the New York City departments of education and health, the Medical Society of the County of Kings and the Brooklyn Tuberculosis and Health Association. About 60,000 pupils are registered in these groups. New Utrecht High School has been tentatively selected as the institution where the first roentgen examinations will be made, February 24. It will take about three months to complete them. The rapid x-ray survey method will be used and parents will be asked to pay a nominal sum of \$1 for the examinations. This fee covers the taking of the roentgenogram, interpretation by technicians designated by the county medical society, and a report of the results to the family physician in all cases in which medical care and treatment are needed.

Society News—A symposium on "The Etiology of Neoplasms" was presented at a joint meeting of the New York Pathological Society and the section of medicine of the New York Academy of Medicine, February 18, by Clara J Lynch, PhD, and Drs Francis Carter Wood and James B Murphy.—Drs Frederic E B Foley, St Paul, and Cyril K Church, addressed the section of genito-urinary surgery of the New York Academy of Medicine, February 19, on "A New Operation for Stricture at the Ureteropelvic Junction" and "Nephropoiesis. Analysis of Palliative and Operative Treatment in 266 Cases" respectively. At a meeting of the section of gynecology and obstetrics, February 25, speakers will be Drs John Mann, Toronto, on "Mechanical Principles in the Management of Occipitoposterior Positions," Charles O McCormick, Indian-

apolis, "Analgesia in Labor A Modified Gwathmey Technique," and Anthony Wollner, "A Preliminary Study of the Histologic Changes in the Human Cervical Mucosa."—Drs Stella S Bradford, Montclair, N J, and Heinrich F Wolf presented papers before the New York Physical Therapy Society, February 5, on "Exercise in the Treatment of Arthritis" and "Methods of Reeducation in Neurologic Conditions" respectively.—The New York Heart Association held a scientific meeting, January 28, with Drs William S McCann, Rochester, and Minnie Jane Sands Robb, Syracuse as speakers on "Cardiac Disorders in Chronic Pulmonary Disease" and "Studies of Cardiac Conduction" respectively

OHIO

Yellow Fever Volunteer Dies—Levi E Folk, Columbus, a volunteer in the group of yellow fever experiments conducted in Cuba by the U S Army Commission under Major Walter Reed, in 1900-1902, died February 8 after a long illness, aged 66. Folk, a private in the hospital corps, volunteered to be bitten by infected mosquitoes and was taken with yellow fever Jan 23, 1901. Folk was one of several volunteers who received gold medals and pensions of \$125 per month authorized by Congress in 1929. The medals were presented in 1931 (THE JOURNAL, Dec 5, 1931, p 1718)

Society News—Dr Marion A Blankenhorn, Cincinnati, addressed the Clinton County Medical Society, Wilmington, January 8, on "General Aspects of Deficiency Diseases."—Drs Ralph Deming, Paul M Holmes and William A Neill, Toledo, addressed the Sandusky County Medical Association, Green Springs, January 30, on tuberculosis.—Dr Albert Graeme Mitchell, Cincinnati, discussed "Nutritional Requirements and How to Fulfill Them" at a joint meeting of the Miami and Shelby County Medical Societies in Troy, January 2.—Dr Chesterfield J Holley, Wheeling, W Va, addressed the Guernsey County Medical Society, Cambridge, January 2, on "Diagnosis of Carcinoma of the Colon."—Dr George I Nelson, Columbus, spoke on pneumonia at a meeting of the Hempstead Academy of Medicine, Portsmouth, January 13.—Dr Albert C Furstenberg, Ann Arbor, Mich, addressed the Columbus Academy of Medicine, January 6, on "Acute Infection of the Mouth, Throat and Neck."—Dr M Herbert Barker, Chicago, addressed the Montgomery County Medical Society, Dayton, February 21, on pneumonia.—Dr Frederick A Collier, Ann Arbor, Mich, addressed the Summit County Medical Society, February 4, on "Water Balance in Surgical Patients." Dr Collier also addressed the Cleveland Academy of Medicine, February 21, on "Water Balance and Dehydration in the Sick Patient."

PENNSYLVANIA

County Secretary for Forty Years—Dr Anthony F Myers, Blooming Glen, was guest of honor at a dinner at Doylestown, recently, celebrating his fiftieth anniversary in the practice of medicine. Dr Myers, who is 80 years old, has been secretary of the Bucks County Medical Society for forty years. It is reported. Speakers at the dinner included Drs Frank Lehman and James Frederick Wagner, Bristol, Henry I Kloppe, Allentown, and Edgar S Buyers, Norristown. Dr Harvey Doyle Webb, Bristol, presided.

Philadelphia

Personal—Dr Sigmund S Greenbaum, associate professor of dermatology and syphilology, University of Pennsylvania Graduate School of Medicine, has been appointed professor in the department. Dr Greenbaum, a graduate of Jefferson Medical College, is dermatologist at Mount Sinai Hospital.

Society News—Drs James P O'Hare, Boston, and Dana W Atchley, New York, addressed the Philadelphia County Medical Society, February 12, on chronic glomerular nephritis and on nephrosis. At a meeting February 19 speakers were Drs Seth A Brumm, on "Immunization Following Electrocoagulation of Tonsils", Seymour DeWitt Ludlum, "Changes in the Globulin Picture Following Electrocoagulation of Tonsils", Benjamin Ulanski, "A New Conservative Method of Treatment for Tic Douloureux", Frederick D Stubbs, "Phrenic Excision in Treatment of Pulmonary Tuberculosis", and James H Mendel, "Eardrums and Their Interpretation," a display of plaster models showing progressive stages of ear infections and their treatment. Graduate seminars on gynecology were presented, February 14, by Dr George A Ulrich on toxemias and February 21 by Dr Philip F Williams on puerperal sepsis.—Speakers at a meeting of the Philadelphia Pediatric Society, February 11 were Drs Mitchell I Rubin and Milton Rapoport on "Three Major Complications of Acute Nephritis," and Rachel Ash, "Statistical Study of Heart Cases at the Children's Hos-

pital from 1925 to 1935."—Among speakers before the Philadelphia Academy of Surgery, February 12, were Drs Thomas A Shallow, on "Resume of 500 Cases of Osteomyelitis," and Alexander Randall and Frederick A Bothe, "Value of Pre operative Irradiation in Tumor Tests."

Pittsburgh

County Society Offers Courses—The Allegheny County Medical Society has announced the tenth series of practical courses to begin the middle of March and run from four to six weeks each. The subjects will be neurology, recent advances in applied therapeutics, office gynecology, treatment of leg ulcers and the injection treatment of varicose veins, acute communicable diseases, common skin diseases and malignant conditions of the mucous membrane, practical obstetrics, anesthesia and gastro enterology.

Society News—Dr Charles C Higgins, Cleveland, addressed the Pittsburgh Urological Association, February 10, on "Further Experimental Observations on the Production and Solution of Urinary Calculi."—At a meeting of the Pittsburgh Ophthalmological Society, February 10, Dr William L Benedict, Rochester, Minn, read a paper on "Surgical Affections of the Orbit."—The annual R W Stewart Memorial Lecture of the Pittsburgh Academy of Medicine was given by Dr Fred W Rankin, Lexington, Ky, February 11, on "Evolution of Surgery of the Large Bowel and Rectum."

SOUTH CAROLINA

Bill Introduced—S 1176 proposes to repeal those provisions of the dental practice act requiring the annual registration of licentiates.

TEXAS

Dallas Clinical Conference—The eighth annual spring conference of the Dallas Southern Clinical Society will be presented at the Baker Hotel, March 16-19. The program includes general assemblies each morning and graduate lectures, round table luncheon conferences, clinics each afternoon, special conferences Tuesday and Thursday afternoons, a public meeting Monday evening, symposiums Tuesday and Wednesday evenings and a banquet for the final high light of the meeting. The following guest speakers will appear at the general assemblies and take part in other parts of the program:

Dr Edgar G Ballenger Atlanta Disorders of the Posterior Urethra
Dr Hans Barkan San Francisco Injuries to the Eye
Dr Francis G Blake New Haven Conn Treatment of Lobular Pneumonia
Dr Alan G Brown Toronto Meeting the Nutritional Requirements of Infancy and Childhood
Dr Louis A Bue Rochester Minn Diagnostic and Therapeutic Methods in Anorectal Diseases
Dr William R Cubbins Chicago Traumatic Injuries to the Knee Joint
Dr C Frederic Fluhmann San Francisco Sex Hormones and Menstruation
Dr Verne C Hunt Los Angeles Diagnosis of Breast Tumors
Dr Foster Kennedy New York Allergic Manifestations in the Nervous System
Dr Byrl R Kirklin Rochester Minn Diagnosis of Early Pulmonary Tuberculosis
Dr John A Kolmer Philadelphia Susceptibility Immunity and Vaccination in Infantile Paralysis
Dr Walter A Wells Washington D C Hoarseness from the Standpoint of the Otolaryngologist

At the public meeting Dr Kennedy will speak on "Education of Children for Emotional Control" and Dr Kolmer on "Vaccination Against Disease." In a symposium on diseases of the paranasal sinuses speakers will be Drs Barkan, Wells and Kolmer, in one on pelvic diseases, Drs Fluhmann and Kennedy, and in one on acute pulmonary diseases, Drs Blake Brown and Kirklin.

VIRGINIA

University News—Dr Sydney W Britton, professor of physiology, University of Virginia Department of Medicine, University, has received a grant of \$15,000 from the Rockefeller Foundation to finance a three year program of research on the adrenal glands.

Bill Introduced—H 275 proposes to prohibit the distribution, except by a licensed physician or by a licentiate under the pharmacy practice act of articles, devices, drugs or medical preparations manufactured primarily for or which may be used as, contraceptives or for the prevention of venereal diseases or infections.

Personal—Dr Will R Williams Richlands was appointed to the state board of health recently to succeed the late Dr Joseph A McGuire, Norton.—Dr Linwood Farley has been made health officer of Hanover County with headquarters at Ashland.—Dr Quintus H Barnev has been elected health officer of Altavista and community succeeding the late Dr John Arnold Board. Dr John W Bowdoin Bloom was recently appointed superintendent of public welfare for Accomac County.

WASHINGTON

Dinner to Dr. Clancy—Friends and associates of Dr. Frank J. Clancy, Seattle, gave him a farewell dinner at the Ramier Club, January 27. Dr. Clancy, who has been executive chairman of the Public Health League of Washington, has been appointed director of the Bureau of Investigation of the American Medical Association, Chicago. Speakers included Drs. Nathan L. Thompson, Everett Casper W. Sharples, Otis F. Lamson, Raymond L. Zech, Harrison, Garner Wright, Robert D. Forbes and George W. Swift.

Society News—Drs. Bernard D. Harrington and Charles D. Hunter, Tacoma, addressed the Pierce County Medical Society, Tacoma, in December, on bone tumors and on dislocation of cervical vertebrae.—Dr. Richard B. Dillehunt, Portland, Ore., addressed the Walla Walla Valley Medical Society, Walla Walla, December 12, on pain in the lower back and sacro-iliac discomfort.—The King County Medical Society was addressed February 17 in Seattle by Drs. Martin Norgore on "Neuroma of the Appendix" and Charles F. Watts, "Coarctation of the Aorta." Dr. Roscoe E. Mosiman conducted a pathologic demonstration, all are from Seattle.

WEST VIRGINIA

Personal—Harry K. Gidley, formerly connected with the Kellogg Foundation of Michigan, has been placed in charge of the state WPA rural sanitation program, succeeding Dr. Frederick T. Foard, who was recently transferred by the U. S. Public Health Service to San Francisco, where he is regional consultant for the service in a territory embracing nine states, the *News Letter* of the state health department reports.

GENERAL

American Academy Offers Prize—In compliance with the requirements of a gift under the will of the late Francis Amory, Beverly, Mass., the American Academy of Arts and Sciences announces the offer of a septennial prize to be known as the Francis Amory Septennial Prize. The gift provides a fund, the income of which may be awarded for conspicuously meritorious contributions to the field of knowledge "during the said septennial period next preceding any award thereof, through experiment, study or otherwise in the diseases of the human sexual generative organs in general." The prize may be awarded to any person or persons for work of "extraordinary or exceptional merit" in this field. In case there is work of a quality to warrant it, the first award will be made in 1940. The total amount of the award will exceed \$10,000 and may be given in one or more awards. It rests solely within the discretion of the academy whether an award shall be made at the end of any given seven year period and also whether it shall be awarded to more than one person. While there will be no formal nominations, and no formal essays or treatises will be required, the committee invites suggestions, which should be made to the Amory Fund Committee, care of the American Academy of Arts and Sciences, 28 Newbury Street, Boston.

Influenza Virus Desired for Study—The International Health Division of the Rockefeller Foundation wishes to obtain strains of virus from different outbreaks of influenza in order to compare their immunologic characteristics in a study now in progress. Health authorities are urged to notify Dr. Johannes H. Bauer, Rockefeller Institute, York Avenue and Sixty-Sixth Street, New York, by collect telegram or fast mail of any epidemic of influenza, giving any particulars, such as the number of cases and clinical characteristics, that may be available. In an extensive outbreak it may be found advisable to send one of the division's investigators, but in smaller outbreaks the cooperation of the local health authorities is requested. On receipt of notice of an outbreak, containers already sterilized will be furnished with detailed instructions for the collection and shipment of the material. Blank forms for recording information will also be furnished. The material most desired is sputum and nasal mucus throat washings obtained by having the patient gargle either with a bacteriologic broth or with ordinary physiologic solution of sodium chloride, and pieces of lung or bronchial mucus in case necropsy material is available. Also blood specimens taken from some of the patients during the early stage of attack as well as during convalescence will be appreciated. The study on influenza was carried on by the Rockefeller Institute at its hospital until January 1 when it was taken over by the International Health Division to be continued in the division's laboratories at the institute.

American College of Physicians—The twentieth annual session of the American College of Physicians will be held at the Book-Cadillac Hotel, Detroit March 2-6. The mornings will be given over to clinics at various local hospitals and the

afternoons to the presentation of papers. Wednesday has been designated "Ann Arbor Day," with the staff of the department of medicine of the University of Michigan presenting the program. Clinics will be conducted in the morning. In the afternoon, papers will be read by the following:

Alexander G. Ruthven, LL.D., president of the University of Michigan, Address of Welcome.
Dr. Fred J. Hodges, Ann Arbor, The Medical and Economic Advantages of an X-Ray Chest Survey of All Hospital Admissions.
Dr. Frederick A. Collier, Ann Arbor, Clinical Aspects of Water Balance and Dehydration.
Dr. Carl D. Camp, Ann Arbor, Relation Between Emotion and Disturbance of Physiologic Function.
Dr. Cyrus C. Sturgis, Ann Arbor, Present Status of Pernicious Anemia. Experience with 600 Cases Over Eight Years.
Dr. Max M. Peet, Ann Arbor, Surgical Treatment of Hypertension.

The annual convocation will be held at the Book-Cadillac Hotel in Detroit Wednesday evening, when the John Phillips Memorial Medal will be presented. Dr. Walter B. Cannon, George Higginson professor of physiology, Harvard Medical School, Boston, will deliver the convocational oration on "The Role of Emotion in Disease," and Dr. James Alexander Miller, New York, the presidential address, entitled "The Changing Order in Medicine." The annual smoker will be held Monday evening. At the annual banquet Thursday evening, Dr. Henry R. Carstens, Detroit, will be the toastmaster and the speaker will be Jesse S. Reeves, Ph.D., W. W. Cook, professor of American Institutions and chairman of the department of political science, University of Michigan. His address will be entitled "New Paths and Old Landmarks."

Medical Bills in Congress—Change in Status H. R. 11035, making appropriations for the military and nonmilitary activities of the War Department for the fiscal year ending June 30, 1937, has passed the House. The bill proposes an appropriation of \$20,660 for the Library of the Surgeon General's Office to purchase books of reference, periodicals and technical supplies and equipment. For the preceding fiscal year the appropriation for similar purposes was \$15,700. The bill proposes no specific appropriation for printing the "Index Catalogue of the Army Medical Library." For the preceding fiscal year, the appropriation for this purpose was \$37,000. The pending bill provides that none of the funds appropriated therein shall be available for any expense on account of any student in the air corps, medical corps, dental corps or veterinary units not a member of such units on May 5, 1932. **Bills Introduced** S. 3984, introduced by Senator Byrnes, South Carolina, proposes to reenact all public laws in effect on March 19, 1933 granting pensions (1) to former members of the military and naval service for injury or disease incurred or aggravated in the line of duty in the military or naval service, other than war-time service, or (2) in the case of death from such injury or disease, to the widows and dependents of such members. S. 4000, introduced (by request) by Senator Copeland, New York, proposes to amend existing laws relating to the dissemination of information concerning the prevention of conception so as to make them inapplicable when such information, or when any article designed, adapted or intended solely for the prevention of conception, is sent, carried or conveyed (1) to any legally licensed practicing physician for the treatment of patients, (2) to any licensed druggist for the sole purpose of filling prescriptions of any such physician, (3) to any legally chartered medical college for medical instruction at such college, or (4) to any legally licensed or chartered hospital or clinic, for the treatment of patients in such hospital or clinic. H. R. 11141, introduced (by request) by Representative Rankin, Mississippi, proposes that, notwithstanding any provision of law to the contrary, in no event shall Veterans' Administration facilities be used, on or after the date of enactment of the bill, to furnish medical and hospital care to persons not eligible to such care under the provisions of the laws providing relief for veterans. H. R. 11142, introduced (by request) by Representative Rankin, Mississippi, proposes to direct the Administrator of Veterans' Affairs to furnish to men discharged from the Army, Navy, Marine Corps or Coast Guard who are suffering from service-connected disabilities, who reside in foreign countries but are citizens of the United States, medical and hospital treatment for such diseases or injuries.

CORRECTION

Tests Used in Studying Hypertensive Disease—In *Queries and Minor Notes* in THE JOURNAL, February 8, page 484, the standard formula employed in determining the blood urea clearance should have read

Standard Blood Urea Clearance = $\frac{U}{B} \sqrt{T}$
instead of with the 666 as printed

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan 18 1936

Reforms in the School Medical Service

The board of education has issued to the local education authorities a circular indicating reforms of which a large proportion concern the school medical service. The local authorities are told that it is their duty not only to provide for the medical inspection of school children but also to make adequate arrangements for their health and physical condition. They should survey the needs of their areas and consider what further steps should be taken to remedy any deficiencies. The following criticisms are made:

THE SCHOOL DENTAL SERVICE

The school dental service is seriously incomplete in most parts of the country. Authorities should aim at an initial dental inspection of every child on its entry into school, to be followed by an annual re-examination. On this basis the board estimates that a minimum standard for a normal number of acceptances for treatment should consist of one dentist for every 5,000 children in an urban area and for every 4,000 in a rural area, although this is insufficient when a high proportion of parents accept treatment for their children.

ORTHOPEDIC TREATMENT

There should be in every area a scheme designed in conjunction with an orthopedic hospital, to provide for the diagnosis, treatment and after-care of crippled children. Areas which have a scheme should consider the adequacy of the provision of places in orthopedic hospital schools for children who require long periods of treatment.

EAR DISEASES

In view of the need for expert treatment of ear diseases which may result in deafness, authorities which have not yet done so should arrange for the services of part time aural specialists who would visit the areas periodically and advise as to treatment. The work of the specialists should be closely coordinated with that of the aural surgeons employed at the isolation hospitals, since many ear defects in children are due to acute infectious diseases.

OPEN AIR SCHOOLS

In many industrial districts open air schools do not exist or their number is inadequate. The board would welcome an increase in their number. While day schools suffice for most children, there are some who on account of their debilitated condition or exceptional home circumstances, require the more continuous care that can be given only in a residential school. Where sufficient accommodation is not available, the existing voluntary agencies should be considered, and if these prove insufficient, the necessary residential schools should be established.

INSTITUTIONAL TREATMENT FOR ACUTE RHEUMATISM

Increased provision is needed for special institutional treatment of children suffering from or convalescent from acute rheumatism, because of the danger of heart disease. Though the number of cases is small the problem is important. The method of cooperation with local voluntary agencies just mentioned might be followed.

SUBNORMAL CHILDREN

The subnormal child calls for careful attention. While additional day special schools for mentally defective children are not as a rule, urgently required there is need for increased

residential provision for difficult children or those of low grade intelligence who are out of reach of or unsuitable for day special schools but cannot properly be retained in the ordinary public elementary school.

THE BLIND AND DEAF

The accommodation for blind and deaf children in the country is generally sufficient, but some additional provision for partially sighted and partially deaf children is desirable.

PHYSICAL EDUCATION

The board states that health can be maintained and improved only by systematic physical education. While organized games play an important part in this, the best means of securing continued physical fitness is by physical exercises in school premises or in the open air. Local authorities should frame comprehensive schemes of physical education. The board proposes to issue a circular dealing with the whole question including the provision of physical education for young people who have left school. A centralized system of the continental type would not be appropriate, but organized local development is essential.

Voluntary Euthanasia

As previously stated the proposal to legalize voluntary euthanasia has met with a good deal of criticism from the medical profession. A discussion took place at a meeting of the West Norfolk division of the British Medical Association in which the legal profession also was represented. Dr P. S. Marshall said that the bill tended to deprive the patient of hope, which was of vital importance in the worst cases. It introduced a disturbing element in the household of the patient and might lead to recriminations in the family afterward. The whole procedure would add much to the patient's distress and the physician's difficulties. From his experience he thought that only exceptionally few cases would come within the scope of the bill, while many patients who were a burden both to themselves and to the community were left out.

Mr Coulton a lawyer, said that the proposals cut right across the long established law of England and that public opinion was still much against suicide. As always there was a time lag between the proposed reform and the education of public opinion. There should be certain safeguards, the physician should not in any way benefit from the death of the patient and should be immune from subsequent action by the relatives.

In the discussion the majority of the speakers were against the proposal chiefly on the ground that there was no call for it and because it excluded many people of the type mentioned by Dr Marshall. On the legal side it was suggested that in nearly all cases of suicide the individual was insane and therefore no man in his senses would sign a document that he wished to take his life. But on the medical side this was not accepted, and it was averred that coroners' verdicts of 'suicide while temporarily insane' were by no means strictly scientific.

Dr C. K. Millard, honorary secretary of the Voluntary Euthanasia Legalization Society, dealt with the objections raised. The number of cases that might come under the bill was a matter of opinion but this should not be a bar to its going forward. The measure was humane. No vote was taken on the bill.

Indian Women and Birth Control

The All-India women's conference at Trivandrum has passed a resolution affirming that there is need for instruction in birth control through recognized clinics and calling on the constituent agencies to make special efforts to induce municipalities and other organizations interested to open centers to give such instruction to all needing it. The resolution was carried by 80 votes to 25. Though it repeats the one of last year it is passing in Travancore where birth control has many opponents is regarded as significant.

Tuberculous Nurses

Tuberculosis is especially fatal to young women and frequently attacks nurses. The directors of the Papworth Village Settlement for Tuberculosis, the pioneer institution of this kind, which has been copied all over the world, have produced a scheme for dealing with the problem. In a letter appealing for funds, published in the *Times*, they point out that after sanatorium treatment the tuberculous nurse is faced, like other sufferers with the necessity of earning her living, but with the difference that her profession often leads her into sick-rooms. If she confesses that she is tuberculous, she destroys her chance of employment. If she conceals the fact, she may come into contact with persons whose lowered resistance makes them susceptible to infection. Recognizing this and conscious of the menace to public health, Papworth has decided to offer a third choice, of great value to these unfortunate nurses and to the community. It proposes to build a special home for tuberculous nurses who come there for treatment and, when active treatment is concluded, to employ them in the exercise of their profession or in other suitable employment under the special conditions which their health requires. These nurses will thus be rendered as nearly as possible self supporting and the community will be protected against infection. At present applications for employment are frequently made to Papworth by tuberculous nurses some of whom have received sanatorium treatment but cannot afterward obtain suitable employment.

PARIS

(From Our Regular Correspondent)

Jan 10, 1936

The Lack of Sanitation in France

In the *Concours medical* Dr J Noir emphasizes the slacking of their duty by the authorities in the matter of sanitation, public hygiene and simple cleanliness. For more than fifty years public education has been compulsory in France and hygiene is given a prominent place in every school. But the people remain about as ignorant in hygiene and sanitation as in past centuries. An example would have to be given by the administrations, which in France are under government control. Consider the buildings in the prefecture of the Seine or in any bureau in France. They sometimes are dilapidated and too often nobody worries about cleanliness, the result is awful. In a lot of government buildings, for instance the duty of cleaning the windows is entrusted to two different departments, the outside to some ministry, the inside to the local authority. The result is that when one side is clean the other is dirty.

The ministry of public health, about which the hygienists indulged in beautiful dreams, is a portfolio to be given to some politician who will be superseded by another one equally inadequate when he begins to learn something about his job. Only one of the ministers of public health has been a physician or some other competent person since the creation of this ministry.

Dr Georges Schreiber in the bulletin of the Parti social de la sante publique points out that the public health law of 1902 is without virtue because the mayors who are in charge of it do not worry about it. In Paris where the police should take more pains to enforcing the law nobody cares the simpler regulations, such as forbidding the exposure of eatable goods to dust and the obligation to wrap bread and fruit, are neglected. The food may be pawed over by anybody and the flies may help themselves first anybody may spit on the ground. The police never arrest any one or if they do the intervention of some alderman releases the offender.

Some departments directly under the control of authorities and managed by technicians are better for instance the inspection of meat or milk in the slaughterhouses or dairies. In some cases, private initiative has succeeded in bettering the

conditions of a whole sanitary department, the Touring Club for instance exerts good control over the country hotels and the automobile associations have made tolerable the policing of the roads. But, on the whole one can hardly hope for a great advance in general sanitation in France except by the education of the public, which is a long and hard task.

The Prevention of Hereditary Syphilis

In the *Concours medical* Professor Gougerot defines the general rules of the prevention of hereditary syphilis. This disease is in France more than a disease it is a national peril and France cannot afford to lose human capital, by death, unfitness or lunacy, conditions that are the future of the syphilitic stock. According to Professor Gougerot, the first step is to avoid procreation before complete recovery from syphilis.

The recognized conditions of a cure, in France are as follows:

A period of two or three years after the chancre, if the treatment is begun early, and four or five years if treatment is initiated a fortnight after the chancre. Regular treatment during this period, with compounds of arsenic, bismuth and mercury.

Absence of any lesion during at least two years.

Normal character of the disease i.e., exclusion of the arsenic resistant or bismuth by resistant cases.

Negative blood test made by the most sensitive methods, such as the Harrison-Walker or Sorelli-Miravent, or the flocculation method, Kahn's type.

Negative spinal fluid test.

Another means of security, the second one is to have the two apparently cured prospective parents treated for two or three months before the wedding.

A third means is to treat always the future mother during her pregnancy. But here the opinions differ. Some physicians advise treatment in every case, even if the preventive standards have been satisfied. Professor Gougerot limits the treatment of formerly syphilitic and actually pregnant women to the cases in which clinical or serologic activity is present in one of the parents or both or in whom the blood test was positive less than two years before when the previous pregnancies were unsuccessful when some of the first children were deficient or unsound, and when the parents show some transmissible taints.

The Blood Sugar in Hypertension

In the *Progres medical* Drs G Carriere and Claude Hurier discuss dextrose metabolism in hypertension. They studied 105 cases in which there was a permanent high blood pressure above 200. The blood sugar in fasting showed a slight increase in ninety-four cases of hypertension and a decrease in eight cases. As to the frequency of permanent high blood pressure in diabetes the authors think that it could be figured between 14 and 30 per cent but it never occurs in juvenile diabetes. The older a diabetic patient is the more he is liable to get hypertension as a result of arteriosclerosis.

The Treatment of Scoliosis

The ankylosing graft operation seems to have been initiated by Professor Ombredanne who at any rate applied it in forty cases presented before the Societe de pediatrie of Paris. General preparation of the patient, who is often underweight is necessary. Such preparatory nursing reduces the mortality from intervention. As for the operation one can use different techniques the Albee operation which is often impossible because of the curve of the vertebrae the Hibbs operation, which is long and complex the Halstead operation and Professor Ombredanne's technique which consists in taking a graft from the tibia. The graft is kept sterile and the tibial section is closed. The patient lies on the bed, flat on the face. The bone graft is inserted between the posterior and the anterior part of the vertebral processes. The main complication is shock which killed three of Professor Ombredanne's patients (two more are dead of septicemia). One can reduce the incidence of the

shock with preoperative care and by performing the operation in two or three stages. The skill of the surgeon is of great moment in shortening the duration of the operation. The results are satisfying. While the graft maintains well enough the rigidity, in four cases the deformity was aggravated.

Bercovitz's Method for Early Diagnosis of Pregnancy

Bercovitz in 1930 proposed a simple method for the early diagnosis of pregnancy, consisting of dropping in the corner of one of the patient's eyes a few drops of her own serum or of her own blood with an admixture of sodium citrate. Two minutes later, according to the time of day, the amount of illumination and the former condition of the pupil, a partial myosis or mydriasis of the treated eye appears, which is easily ascertainable by comparing with the other eye. This reaction was averred to be positive in 84.7 per cent of the cases observed. In the Société d'obstétrique et de gynécologie of Paris, Dr. L. Pouliot introduced some minor changes in Bercovitz's technique. He found it convenient to look first at both eyes with a mild illumination and then suddenly to throw a bright light on the eyes. Pouliot tried the Bercovitz test on forty-four women. Every woman with a positive test was found to be pregnant. In two cases the early diagnosis was important because of an extra uterine pregnancy. These diagnoses were all made before any clinical evidence of pregnancy, or even any suspicion, for instance after only eight days of delay of the menses. Pouliot concludes that: 1. A clear-cut positive reaction certainly indicates pregnancy. 2. One must consider as positive only myosis of the treated eye, pupillary changes leave room for doubt. 3. Negative reactions, without any clinical symptom of pregnancy, have very slight value, at least till the suppression of a second menstrual period. If the test is negative, and the pregnancy on the other hand is clinically probable, one must allow for the possibility of a retained dead ovum.

BERLIN

(From Our Regular Correspondent)

Dec. 26, 1935

Bureau to Combat Violation of Antinarcotic Laws

For the purpose of waging a more efficient struggle against the illicit traffic in narcotics, the ministry of the interior has established, with immediately gratifying results, a government central headquarters for combating offenses against the antinarcotic laws. This bureau functions in conjunction with the previously existing antinarcotic activities of the Prussian crime detection bureau in Berlin. At the same time branches of the central bureau have been set up throughout Germany. Local authorities must report to these coordinating bureaus all cases of more than a local significance. This must be done immediately if there is reason to suspect a criminal trade the ramifications of which are more than local and which is engaged in by professional criminals.

Suspects are also reported whose extensive journeying or foreign contacts might connect them with the sale and procurement of narcotics. Furthermore, pharmacy burglars, recidivist thieves and swindlers are reported to the bureau. As for drug addicts whose defective responsibility exempts them from criminal prosecution their commitment to a hospital is effected. All cases involving administration of health regulations are reported to the ministry of health, the cooperation of which is assured. Furthermore, the government central bureau is provided with a card index of known criminals.

Crime-Commissioner Thomas, writing on the narcotic question in the *Zeitschrift für Polizeibeamtete* states that the number of drug addicts is difficult to determine but that the proportion is scarcely greater than one to each 10,000 inhabitants. When however the number was last computed in Germany (1928) there were estimated to be between 6,000 and 8,000 chronic

opium addicts in the country. Meanwhile the still incomplete card index of the central bureau lists more than 1,000 who have been held subject to criminal prosecution. These figures show cause enough why the antinarcotic campaign should receive the vigorous attention of the authorities. While in the past it was customary for addicts considered mentally irresponsible to be released as immune from prosecution, the National Socialist government has taken measures to protect the general public against law breakers of this type. It is now possible in case of manifest irresponsibility to commit the offender for an indefinite period of time to an institution wherein he will receive proper treatment.

Group Examinations for Cancer

The Königsberg gynecologist Professor von Mikulicz-Radecki points out in *Der öffentliche Gesundheitsdienst* that according to careful estimates cancer is present in about a quarter of a million people in Germany (about one in every 240) and of these one fourth are under the age of 40. A majority of those afflicted with cancer still succumb to this disease. An organized anti-cancer campaign must be based on early diagnosis and must have as its aim the detection of the cancerous condition at such an early stage that favorable prognosis may be indicated in 80 per cent of the cases. Every citizen ought to be acquainted with the nature of cancer, and every physician should be in a position to recognize cancer in its earliest manifestations. A most efficient measure in the fight against cancer may be the systematic group examination of all healthy persons who have arrived at an age when a greater danger of cancer exists. In East Prussia, the capital of which province is Königsberg, this idea was attempted in 1933. No striking success was realized at that time, however, as the women would not come in voluntarily for examination. Thereupon the bureau of people's health of the National Socialist party in cooperation with the East Prussian administrative board inaugurated a large scale anti-cancer offensive. In 1936, group examinations will be undertaken not only in all the hospitals in the city of Königsberg but throughout the province as well. The examinations have already disclosed a whole series of cancerous conditions of which the persons themselves had no presentiment and which involved the mammary glands as well as the genitals. In the meantime the activity of the examining clinics had been discussed among the population with the result that the women now began to come voluntarily to be examined. This goes to show that cancer fear need not be produced by such measures as these.

Regulation of Blood Stream Resistance in the Lungs

The Breslau physiologist Professor Wagner recently pointed out the important factors that influence the pulmonary circulation, such as resistance changes in the pulmonary capillaries, transmission of the intrathoracic pressure, and changes in the beat volume due to changes in the blood supply. Of especial importance is the alteration in the course of ventricular pressure during inflation of the lung and its relation to the expulsion period of the right ventricle. From prolonged inflation the values of the maximum systolic pressure in the right ventricle are finally decreased because the amount of blood supplying the right ventricle must decrease below its outgoing volume. It is thus shown that the position of the thorax is of importance for the function of the right ventricle. If, during inflation, the thorax finds itself for some time nearer the expiratory position, the right ventricle is able to shut off the blood through the lungs with less exertion than if the thorax were near an inspiratory position. Considering the action of the reserve capillaries, it is to be expected that an increased pulmonary inflation would lead to a greater blood perfusion of reserve capillaries so that with an increased inflation the blood stream in the lungs is spread over a greater surface. Since only the surface of the blood stream comes into consideration as a gas exchange surface apparently it may be possible for the organism to control the

respiratorily active blood surface according to the degree of pulmonary inflation. The reflex apparatus, first described in its effect by W. R. Hess of Zurich, which provides for a tonic adjustment of the respiratory musculature, particularly the diaphragm, is important in the adaptation of the respiratorily active surface of the blood stream within the lungs. This apparatus, which gives the respiratory muscles tonicity, apparently effects a correlation between minute volume in the pulmonary circulation and respiratory exchange of gases. The tonic component, which is determined by the extent of the deepest expiratory position, probably serves chiefly the adjustment of the active respiratory surfaces of the blood stream, whereas the respiratory movements chiefly supply the air exchange for the tonicized fixed respiratorily active blood surface and, as it were, breathe on it. The respiratory movement takes place in such a way that at no time will there be a reduction of the tonicized fixed minimal surface of the blood stream, which is determined by the expiratory position. One concludes that the respiratory center has a double purpose. Its rhythmic fluctuations of irritability serve the air exchange, while its tonic control probably serves principally the regulation of the respiratorily active surfaces of the blood stream within the lungs.

Group Roentgen Examinations in Combating Tuberculosis

Group roentgen examinations for the determination of tuberculosis have been undertaken for some time now. Particularly in Switzerland have noteworthy results been reported. Recently Dr. Misgeld made a report to the Berlin Medical Association on experimentation in this field. When one realizes that today the number of actively tuberculous persons in Germany amounts to from 300,000 to 400,000, together with a million threatened with the disease, one can scarcely overestimate the importance of a defensive campaign against this plague. Roentgenologic control is in particular requisite to the arrest of latent tuberculosis. How often potentially infectious tuberculosis can run a course nearly free from subjective symptoms is demonstrated by the result of a group roentgen examination of some 850 men, members of a special formation unit of the *Schutzstaffel* of the National Socialist party. Again and again cases of active tuberculosis were discovered. It is therefore indicated that compulsory roentgen examinations should be instituted at least wherever people are brought together in great communities.

ITALY

(From Our Regular Correspondent)

Dec 22, 1935

The Annual Congress of Internal Medicine

The forty-first National Congress of Internal Medicine was held this year at Bologna (the meeting place of all medical congresses) with Senator Prof. Giacinto Viola presiding. In the opening address the esteemed Senator Prof. Edoardo Maragghano pointed out that the method followed by the society for the last half century is that of collective critical evaluation. Up to the present, 120 different topics have been dealt with in this manner. The dominant principle is the study of the patient. All clinics are biologic but concerned solely with that part of biology which is applicable to the understanding of the patient. Many clinical schools of Italy cooperate with the main school in keeping the society active and alive and for some years now the medical corps of the army has participated in the work of the society. He stated that, as the result of collaboration with the society of surgery, several specialties have been developed, such as hematology and legal medicine two recently added. But internal medicine and surgery must remain the directing and unifying centers of all the specialties. After analysis comes synthesis increasingly important at present in view of recent discoveries which show pathologic conditions as resulting not from the disease of a single organ but from anatomic and functional correlations between various organs.

The first subject, "Evaluation of the Individual Constitution," was divided into four parts: (1) "The Present Situation of the Scientific Movement with Regard to Individual Constitutions" by Dr. Benedetti, (2) "My Method of Evaluation of the Individual Constitution," by Dr. Viola, (3) "Growth from Ages of 11 to 17 and the Measurements That Assist in the Evaluation of the Individual Constitution According to the Viola Method," by Dr. Schiassi, (4) "The Psychologic Evaluation of the Individual Constitution," by Dr. Capone.

Dr. Benedetti stated that, differing in this respect from others, the Italian school understands by individual constitution the total of all the characteristics, somatic, functional, organic and psychologic, that differentiate one person from another. This school considers the sole object of its research to be the evaluation of the person in his complexity (phenotype), as a variant from the anatomic functional level of the species, modified by environment and the laws of heredity. The study of the person is arrived at only by means of lengthy approach in which figure the anatomy, physiology and pathology of the average type of our species, thus many factors are involved, such as the constitution according to race, ethnic group, sex, age and social station. The speaker reviewed recent foreign and Italian scientific contributions to the argument, making clear the differences between the foreign schools and the Italian school, which is based on the thought of De Giovanni, Viola, Castellino and Pende. The science of the individual constitution is new and as such leaves much to be accomplished.

Dr. Viola stated that, since the constitutional variability of characteristics is quantitative, the only method of research applicable to constitutional science is anthropometry, whether external or internal, functional, organic or psychologic. Anthropometric research is not limited to the measurement of the individual variants of each character but takes into account their evaluation according to the norm of individual statistics. The individual variations of characteristics and their combinations are infinite, but all are subject to the law of accidental errors of Quetelet, which finds its graphic expression in the curve of Gauss, characteristically bell-like in form. Viola's objective method of evaluation gives a double conception of the evaluation of each human characteristic in centesimal and stigmatic degrees and has for its unique object of study the average man considered as a systematic unit derived from a synthesis of normal values of all the characteristics considered. The existence of this average man, demonstrated by Viola during the last thirty years, is confirmed by new observations. Viola's external anthropometric method is based on ten simple fundamental measurements (closed system) from which are obtained, by simple calculations, a series of relationships that become gradually more complex as their elaboration proceeds. The second phase of Viola's method is concerned with the evaluation of functional individuality, which is based on the direct quantitative determination of a number of organic functions, on the study of interfunctional relationships and on the elaboration of certain synthetic indexes, which become gradually more complex until the formation of the general index of organic power. The important synthetic indexes have to do with the perimetral average of the limbs, the dynamometric average, the cardiac value and the indexes of cardiac power. A series of relationships (spiro-somatic, spiro-thoracic, spiro-cardiac) are drawn from these indexes. From these first synthetic evaluations he goes to more comprehensive evaluations represented by the static index and the dynamic index of organic power, whence he derives as a synthesis of the third order the general index of organic power. In such a way the individual is evaluated on the basis of a uniform system, founded on mathematics, which resolves the problems that beset the practicing physician when he attempts to characterize people as robust, average or delicate.

Dr Schiassi set forth the results of a study of that period of growth during which sexual maturity takes place. The groups studied consisted of males and females varying in number between fifty and a hundred. The result of many measurements shows that the most intensive development takes place in female subjects aged from 12 to 14 and in male subjects aged from 13 to 15. At the age of 10 the measurements of male subjects are nearly equal to those of female subjects from 12 to 14, the curve of the female subjects runs above that of the males throughout the greater part of linear and cubic measurements. This growth coincides with, or slightly precedes, the definite manifestation of sexual maturity in fact from 20 to 25 per cent of Bolognese girls first menstruate at the age of 13, and 98 per cent of these girls are menstruating at the age of 15.

Dr Capone, in the study of psychologic evaluation of the individual constitution distinguishes a cortical or superior personality and also an instinctive or fundamental personality. He finds that, as the values of the superior personality and of the affective personality are raised, the percental number of longi types is increased. The number of extroverts (in the precise sense of Jung) increases. With the rise of the affective personality, the percental number of tachypsychic persons increases.

The second paper on the diagnosis of icterus, was by Senator Prof Ferdinando Micheli of Turin, assisted by Drs Dominici and Allodi. Dr Micheli said that icterus is a symptom rather than a syndrome. When in addition to the yellow color there are such other symptoms as pruritus, bradycardia or hemorrhage these are no longer attributed to certain constituents of bile, as was formerly done. The diagnosis is difficult and sometimes extremely serious. In each case in which the diagnosis of icterus does not appear obvious, one should proceed to classify the icterus as belonging to one of four groups: mechanical, hepatogenous, hemolytic or prehepatic and hepatic-cholangitic. The second phase of the diagnosis consists of subclassification of the individual case into further categories. The ease with which this may be accomplished depends on the thoroughness of the examination.

D Amato illustrated his studies on the chemical changes in bile following hepatic, chemical and bacterial intoxication. He believes that when icterus is not present the changes may be in the hepatic cell; when icterus is present, cellular disturbance and changes in the biliary capillaries are manifest.

For the next congress the following subjects were chosen: (1) cardiac decompensation (Dr Cesa-Bianchi), (2) lipodystrophy and constitutional emacration (Dr Galli) and (3) sellar tumors (in conjunction with the society of surgery).

Marriages

WALTER W BROWN, Willford Ark., to Miss Margaret McLeod of Sault Ste Marie, Mich., recently.

JOHN EDWIN BROWN JR, Columbus, Ohio to Miss Rosamond Lawson Foote of Baltimore, Dec 28, 1935.

WALTER GRADY BISHOP, Greenwood, S C, to Miss Martha Thurmond of Spartanburg in January.

JOHN GORDON BELL, Covington Va., to Miss Anna Lee Paschall of Richmond, Nov 30, 1935.

RICHARD LAWRENCE DAY, Ridgewood, N J, to Miss Ida Elizabeth Holt of Summit, January 10.

RODOLPH FOWLKES, Welch, W Va., to Miss Rinda Elizabeth Gay of Chatham, Va., Dec 11, 1935.

GEORGE LOUIS JONES, Ridgeway Va., to Miss Ruth Margaret Wilson of Richmond Dec 14, 1935.

ANGUS HINSON, New York to Miss Johnnie Lea Black of Chase City, Va., Oct 19, 1935.

BERNARD H BAYER, Houston Texas, to Miss Rebecca Miller of New Orleans recently.

Deaths

Rea Everett Smith of Los Angeles, University of Pennsylvania Department of Medicine, Philadelphia, 1902, member of the American Surgical Association, member and past president of the Pacific Coast Surgical Association, fellow of the American College of Surgeons, clinical professor of surgery, University of Southern California School of Medicine, formerly professor of clinical surgery, College of Medical Evangelists served during the World War, on the staffs of the Los Angeles General Hospital, Good Samaritan Hospital, Methodist Hospital and the Cedars of Lebanon Hospital, aged 59, died suddenly, Nov 29, 1935 of coronary thrombosis while aboard a yacht.

Parran Jarboe, Greensboro, N C, Georgetown University School of Medicine, Washington, D C, 1905, member of the Medical Society of the State of North Carolina, fellow of the American College of Surgeons, formerly secretary of the Guilford County Medical Society, on the staffs of St Leo's Hospital, L Richardson Memorial Hospital, Sternberger Children's Hospital, Wesley Long Hospital and the Glenwood Park Sanitarium aged 53, died Dec 29, 1935, in a hospital at Shelby, of injuries received in an automobile accident.

William Oliver Floyd of Nashville, Tenn., University of Nashville Medical Department, 1910 served during the World War, member of the Southern Surgical Association, fellow of the American College of Surgeons, assistant in clinical surgery, Vanderbilt University School of Medicine since 1925, member of the surgical staffs of the Vanderbilt St Thomas, Nashville General and City hospitals, aged 56, died, January 12, of pneumonia.

Roy Seymour Watson of Saginaw, Mich., Rush Medical College, Chicago 1904 member of the American Academy of Ophthalmology and Oto-Laryngology fellow of the American College of Surgeons, served during the World War, chief of otolaryngology, Saginaw General Hospital, aged 53, died, Nov 27, 1935 of chronic myocarditis.

Franklin Elmore Ray, Shelbyville, Ind. Medical College of Indiana Indianapolis, 1890 member of the Indiana State Medical Association, at one time county coroner and member of the county board of health aged 70 on the staff of the Major Memorial Hospital, where he died Dec 18, 1935 of septicemia due to an injury to a finger.

Millington Smith of Oklahoma City, Missouri Medical College St Louis, 1881, professor of gynecology, emeritus University of Oklahoma School of Medicine, fellow of the American College of Surgeons medical director of the Mid Continent Life Insurance Company aged 75 consulting surgeon to University Hospital and St Anthony's, where he died January 9, of carcinomatosis.

James Edward Davis of McAlester, Okla., Hospital College of Medicine, Louisville, Ky 1904 past president of the Pittsburg County Medical Society on the staffs of the Albert Pike Hospital and St Mary's Infirmary aged 56 died Dec 20, 1935 in the A C H Hospital, Shawnee, of injuries received in an automobile accident.

Emil Otto Krueger of Michigan City Ind. University of Michigan Department of Medicine and Surgery, Ann Arbor 1908 past president of the La Porte County Medical Society on the staffs of the Clinic Hospital and St Anthony's Hospital aged 50, died, Dec 22, 1935 of abdominal abscess and organic heart disease.

Dennett B Hamilton, Dodgeville Wis. Wisconsin College of Physicians and Surgeons Milwaukee, 1899 member of the State Medical Society of Wisconsin on the staffs of the Dodgeville General Hospital and St Joseph's Hospital, aged 59 died, Dec 20, 1935 of intestinal obstruction due to postoperative adhesions.

Francis Xavier Mahoney, Boston Harvard University Medical School, Boston 1905 member of the Massachusetts Medical Society, health commissioner of Boston formerly chairman of the city board of health aged 65 died January 14 in the Deaconess Hospital, of carcinoma of the liver and pancreas.

Hubert Livingstone Miller of Captain U S Army retired Seattle University of Pennsylvania Department of Medicine Philadelphia 1905, served during the World War entered the medical corps of the U S Army in 1920 as a captain and retired in 1923 for disability in line of duty aged 53, died Dec 7, 1935.

Edgar F Fincher Sr, Atlanta Ga. Atlanta College of Physicians and Surgeons 1901 member of the Medical Association of Georgia, on the staff of the Piedmont Hospital for

many years member of the board of trustees of the Grady Hospital, aged 66, died, January 7, of coronary sclerosis

William James McCollum, Toronto, Ont., Canada, Victoria University Medical Department, Coburg, 1894, formerly associate in medicine and clinical medicine University of Toronto Faculty of Medicine, for many years on the staff of St Michael's Hospital, aged 63, died, Dec 24, 1935

Daniel Henry Cunningham, Chicago, Jefferson Medical College of Philadelphia, 1893, instructor in medicine, College of Physicians and Surgeons, 1903-1907 on the staff of the Hospital of St Anthony de Padua, 1905-1914, aged 71, died, Dec 28, 1935, of chronic nephritis and hypertension

Dana Elbra Monroe * Cameron, Texas, Johns Hopkins University School of Medicine, Baltimore, 1910, past president and secretary of the Milam County Medical Society, served during the World War, on the staff of the Cameron Hospital, aged 51, died, Nov 25, 1935, of septicemia

Homer Tomlinson Partree * Torrington, Conn., Yale University School of Medicine, New Haven, 1892, formerly medical inspector for the schools and health officer of Eaton-town, N. J., on the staff of the Charlotte Hungerford Hospital, aged 70, died Dec 9, 1935, of pneumonia

Rufus Herbert Carver * Providence R. I., Harvard University Medical School, Boston 1870 on the consulting staff of the Providence Living-In Hospital and on the courtesy staff of the Rhode Island Hospital, aged 86, died Dec 30, 1935 of hypostatic pneumonia

Edwin Harper Linfield, Alexandria La. Tulane University of Louisiana School of Medicine New Orleans 1920 on the staff of the Veterans Administration Facility, aged 39, died, Dec 28, 1935, in Jonesville, of injuries received in an automobile accident

George Earl Low, Grants Pass Ore., Willamette University Medical Department Salem, 1912 served during the World War, aged 50, died Dec 9 1935 in the Veterans Administration Facility, Portland, of carcinoma of the stomach with metastases

Irwin Zepp Kinsey, Souderton Pa. Jefferson Medical College of Philadelphia, 1926, member of the Medical Society of the State of Pennsylvania, on the staff of the Grand View Hospital, Sellersville, aged 46, died Dec 8, 1935 of heart disease

George Francis Sullivan * Hoboken N. J., University of Pennsylvania Department of Medicine, Philadelphia 1907, aged 50 on the staff of St Mary's Hospital, where he died, Dec 23 1935, of coronary thrombosis and arteriosclerosis

William Irvin Messick, Baltimore, University of Maryland School of Medicine, Baltimore, 1895, formerly associate professor of clinical medicine at his alma mater, aged 66, died January 3, in the University Hospital, of diabetes mellitus

Jacob Wells Meighen, Ulen Minn., University of Minnesota Medical School Minneapolis, 1896, formerly on the staff of St Ansgars Hospital, Moorhead, aged 72 died Dec 9 1935 in Minneapolis, of pneumonia and cerebral hemorrhage

Charles Abel Howland, Schenectady, N. Y. Baltimore Medical College, 1908, member of the Massachusetts Medical Society served during the World War, aged 58 died Dec 28 1935, of coronary thrombosis and arteriosclerosis

Thomas Nelson Schnetz, Milwaukee, Rush Medical College Chicago 1884 formerly associate professor of physiology Milwaukee Medical College, aged 75, died Dec 17 1935 of carcinoma of the prostate and bronchopneumonia

George H. Herring, Slocomb, Ala. Georgia College of Eclectic Medicine and Surgery, Atlanta 1898, member of the Medical Association of the State of Alabama, aged 58 died in December 1935 of pneumonia

Carl Ludwig Knitter Jr., Chincoteague Va. Hahnemann Medical College and Hospital of Philadelphia 1928, aged 35 died Dec 25 1935 at the Johns Hopkins Hospital Baltimore, of pneumonia and brain tumor

Frederick Smith Clark, Columbus Ohio Ohio Medical University Columbus 1907 member of the Ohio State Medical Association, aged 59 died Dec 9, 1935, in the White Cross Hospital of heart disease

Westley W. Halliburton, Alton Ill. Missouri Medical College St. Louis 1878, member of the Illinois State Medical Society, aged 84 died Dec 28 1935, in St Joseph's Hospital, of cerebral hemorrhage

William P. Parrish, Chatham Va. Baltimore Medical College, 1891, member of the Medical Society of Virginia formerly mayor of Chatham, aged 69, died Dec 6, 1935 of arteriosclerosis and hypertension

Solomon Crittenden Jones, Buileys Switch, Ky., University of Louisville Medical Department, 1898, member of the Kentucky State Medical Association, aged 66, died Dec 25, 1935, of heart disease

Joseph H. Schnell, Houston Texas, University of Pennsylvania Department of Medicine, Philadelphia, 1872, aged 85, died, Dec 13, 1935, of cerebral hemorrhage, chronic nephritis and arteriosclerosis

Charles Sledge Coker, Crosby, Texas, Dallas Medical College 1904, aged 76 died Dec 19 1935 in the Memorial Hospital, Houston, of hypertensive heart disease, nephritis and bronchopneumonia

Harvey Whiting Humphrey, Lowville N. Y. New York University Medical College, 1897, member of the Medical Society of the State of New York, aged 64 died, Dec 21 1935, of myocarditis

Luther Green Probasco, Whitesville, N. Y., Baltimore Medical College, 1898, member of the Medical Society of the State of New York, aged 63, died, Dec 24, 1935, of chronic myocarditis

Joseph J. Clark, Tishomingo, Okla. University of Louisville (Ky.) Medical Department 1896 formerly member of the state legislature, aged 60, died suddenly Dec 10 1935 of heart disease

Henry B. Pack, Blacksburg Va. College of Physicians and Surgeons, Baltimore 1905 aged 57 died Dec 2 1935, in the New Altamont Hospital Christiansburg of coronary thrombosis

Alfred C. Heritage, Jenkintown Pa. Hahnemann Medical College of Philadelphia, 1884, aged 77, died Dec 11, 1935 at his winter home in St Petersburg, Fla., of bronchopneumonia

David Cummings McLaren, Ottawa, Ont., Canada McGill University Faculty of Medicine Montreal Que., 1880, Hahnemann Medical College of Philadelphia, 1881 died, Dec 30, 1935

Alfred William Christopherson, Pendleton Ore., University of Oregon Medical School, Portland 1928 member of the Oregon State Medical Society, aged 34, died, Dec 3, 1935

George Francis May, London, England, McGill University Faculty of Medicine, Montreal, Que., Canada, 1895, served during the World War, died suddenly Oct 16, 1935

George B. M. Bower, Fort Wayne, Ind., University of Maryland School of Medicine, Baltimore 1887, aged 73 died Dec 28 1935, of uremia and prostatic obstruction

John Fletcher Massey * Ventnor, N. J. Tennessee Medical College, Knoxville, 1903, served during the World War, aged 63 died Dec 21 1935 of angina pectoris

William Compton Harris, Houston, Texas, St. Louis College of Physicians and Surgeons 1891 aged 65, died Dec 13 1935, of chronic myocarditis and hypertension

George White, Chicago, Kentucky School of Medicine Louisville, 1881, aged 80, died, Dec 17, 1935, in the Roseland Community Hospital, of cerebral hemorrhage

L. K. Swango, Carlisle, Ky. Louisville Medical College 1891 member of the Kentucky State Medical Association, aged 68 died, Dec 12, 1935, of heart disease

Thomas Warren Knight, Portage, Ohio Hahnemann Medical College and Hospital, Chicago 1893, aged 80 died Dec 4 1935, of hypostatic pneumonia

Lewis Scott Harvey, Council Grove Kan. University Medical College of Kansas City Mo. 1901 aged 56 died Dec 16, 1935, of cerebral hemorrhage

John K. Knorr, Ventnor, N. J., Jefferson Medical College of Philadelphia 1867 aged 89 died Dec 25 1935 of chronic myocarditis and arteriosclerosis

Elbert Ernest Cone, Oxford Neb. Eclectic Medical Institute, Cincinnati, 1892, aged 69, died, Dec 31, 1935, of myocarditis and bronchopneumonia

Edward E. G. Weiland, Bloomington Ill. (licensed in Illinois in 1895), aged 67 died, Dec 14 1935 as the result of injuries received in a fall

Alonzo Richard Hodge, Severn N. C., Medical College of Virginia, Richmond, 1925, aged 35, died, Dec 12, 1935 of pneumonia and influenza

Joseph H. Miller, Fremont, Neb., Omaha Medical College, 1888, aged 75 died Dec 11, 1935, in the Clarkson Hospital, Omaha of peritonitis

John Joseph McLaughlin, Chicago Long Island College Hospital Brooklyn 1879, aged 77, died, Dec 30, 1935, of myocarditis

Correspondence

"USE OF UNSATURATED FATTY ACIDS IN TREATMENT OF ECZEMA"

To the Editor —In THE JOURNAL, January 4, page 64, Dr J F McClendon replied to our article on "The Use of Unsaturated Fatty Acids in the Treatment of Eczema" (THE JOURNAL, Nov 23, 1935, p 1675), citing his own experience with vegetable oils in the diet. He also calls attention to the deleterious effects of the lack of vegetable oils in the diet of the Japanese. Vegetable oils have been used from time immemorial by all races as a food.

However, the aim of our paper was to decry the promiscuous use of linseed oil as a therapeutic agent in atopic conditions.

Recently our attention was called to another article on hypersensitivity to linseed oil by Dr Charles Sutherland (M J Australia 2 661 [Nov 15] 1930). Two patients who were asthmatic had severe attacks of asthma after the use of linseed oil. Linseed oil and cottonseed oil contain active atopen and may produce symptoms by inhalation, ingestion or as a contactant, in atopic individuals. Coca emphasizes this fact, particularly with reference to cottonseed oil, in his book on asthma.

SAMUEL J TAUB, MD

SAMUEL J ZAKON, MD

Chicago

COLON IRRIGATIONS

To the Editor —If there is no agreement regarding a therapeutic measure that has been in use for a long time its alleged value may properly be questioned. Yet if it continues to be employed by a number of careful clinical observers it may have a usefulness that other observers have failed to note. This applies to colon irrigations; the desirable attitude toward which is not exaggerated abuse by those who do not use them or overweening praise by those who do, but a correct estimate of their value and indications.

Such an appraisal is attempted by Dr Frank H Krusen in his article in THE JOURNAL of January 11. In large measure I agree with what he says. But as he has quoted me freely may I be permitted to point out what seem to me some erroneous impressions given by his paper?

1. The terms 'mucous colitis' and 'ulcerative colitis' he apparently considers synonymous, for he contrasts my favor of the use of irrigations in mucous colitis with Barger's objections to it in ulcerative colitis. Later he says 'The observations of Barger tend to show that colonic irrigations are contraindicated in 'mucous colitis' and the consensus among experts in the field would tend to support Barger's contentions'. In the article from which this was abstracted (Chronic Ulcerative Colitis, *Am J Digest Dis & Nutrition* 1 190 [May] 1934) Barger was not speaking of mucous colitis but solely of ulcerative colitis. Mucous colitis is not ulcerative colitis and, like Barger, I am opposed to the use of irrigations in the latter condition.

In my paper on colon irrigation in THE JOURNAL, Feb 27, 1932, I gave several possible uses for irrigations but my employment of them is confined almost exclusively to patients with mucous colitis. Even in arthritic patients I continue their use only if mucous colitis is present. To remove toxic matter my use of them is almost limited to patients with acute or subacute food poisoning. When there is chronic intestinal putrefactive toxemia, more can be accomplished by regulation of the diet and of the bowel movements. The nature of mucous colitis is by no means fixed in the minds of the profession; indeed some consider it a myth, notably Dr A F Hurst of London.

My reasons for believing it a clinical entity and my conception of its nature are given at length in *Medical Clinics of North America* (18 883 910 [Nov] 1934).

2. The author quotes Rankin, Barger and Bure: "Almost invariably irrigation with medicated solutions, continued over a time that is long enough to have effect, makes for increased irritation and abdominal discomfort." Tidv has suggested that medicated enemas continued over a period of time would induce colitis in healthy individuals. What do these writers mean by medicated solutions? Are they liquids containing salt, sodium bicarbonate, soap, peppermint, turpentine, silver nitrate or what? Have the authors evidence, not suggestions, that any or all of these liquids produce colitis, and if so under what conditions of use? These questions I ask solely for the sake of truth; for like these physicians I am opposed to the use of medicated irrigation fluids. But condemnation of the use of medicated fluids cannot be construed into condemnation of all irrigations. I regularly employ plain water. Physiologic solution of sodium chloride is next best, but I think that it is too readily absorbed, for its use is often followed by the necessity of emptying the bladder two or three times within an hour or two. All colon contents normally contain much water, but no one would suggest that such contents ever resemble physiologic solution of sodium chloride or are isotonic with it.

3. As indicating lack of approval of irrigations by physicians, the author reports extremely few calls for them in his hospitals. I find that in hospitals with a physical therapy department not only is an extra charge made for an irrigation but the patient must be conveyed from the bedroom to the irrigation room under a fixed appointment time. Usually the apparatus is cumbersome and elaborate, and the nurse fills the patient's ears with laudation of the particular method employed. Physicians have stated to me that they do not like such hospital schemes and prefer to have irrigations given in bed with simple apparatus by the patient's nurse. However, judging from my many years' experience on the attending staffs of two active general hospitals the indications for irrigation are rather infrequently encountered in bed patients. Therefore the number of calls for irrigations in a physical therapy department is not a measure of their approval by the physicians of the community.

I am not an irrigationist but a therapist, and my judgment is that simply administered colon irrigations have a definite though limited use in the practice of medicine. This communication is intended as constructive and not destructive criticism of Dr Krusen's paper.

WALTER A BASTEDO MD New York

ATROPINE AND BELLADONNA IN STOMACH DISORDERS

To the Editor —I have read Dr Walter A Bastedo's article "The Value of Atropine and Belladonna in Stomach Disorders" which appeared in THE JOURNAL, January 11, page 85, in which he states that 'In single maximum doses by hypodermic injection, atropine may have a limited value in reducing secretion and spasm.'

My interest in the parenteral use of atropine goes back two years, at which time a patient with gastric crisis was being treated. The vomiting had persisted for several days in spite of medication including the subcutaneous administration of atropine but stopped within five minutes after the intravenous administration of 0.6 mg ($\frac{1}{100}$ grain) of atropine. The result was so miraculous that other symptoms thought to be related to the parasympathetic nervous system have been treated similarly.

From 0.4 to 0.5 mg ($\frac{1}{150}$ to $\frac{1}{120}$ grain) of atropine dissolved in about 1 cc of saline solution has been used intravenously.

Phenobarbital sodium (2 grains, or 0.13 Gm) was given at the same time in two instances when the psychic element seemed to be quite prominent. Relief from nausea, vomiting and pain was obtained within two to five minutes in patients with smooth muscle spasm secondary to a peptic ulcer or pylorospasm.

The relief from the intravenous use of atropine has almost been phenomenal with other symptoms thought to be related to the parasympathetic nervous system. Thus the pain in angina pectoris, biliary dyskinesia or that associated with the grasping of a gallstone in the neck of the gallbladder, and ulcerative colitis, the dyspnea of asthma, and, in two cases cardiac extrasystoles have been stopped. The intravenous atropine has not been effective with pain secondary to coronary thrombosis, infection and necrosis (pancreatitis), or to the presence of a foreign body (common duct stone, hydrops of the gallbladder, ureteral stone). It did not help the pain in one patient who had had an operation for gallstones and who felt that a stone had been overlooked and who subsequently was cured by an exploratory operation (psychoneurosis).

The intravenous administration of the maximal doses of atropine has a definite place in the relief from certain types of pain. It also serves to differentiate similar pains (such as angina pectoris and coronary thrombosis, biliary dyskinesia and common duct stone). It has been given in doses of from 0.3 to 0.6 mg and repeated, if necessary, at fifteen minute intervals until signs of atropinism appeared. It is difficult to explain the discrepancy in the action of such large doses given intravenously and subcutaneously, unless it might be that through the intravenous route the maximum dose is available immediately. No bad effects have been noted in the dosage used.

The use of atropine intravenously in gastric crisis was suggested by Dr. Joseph Earle Moore in *The Modern Treatment of Syphilis*, Springfield, Ill., Charles C. Thomas, 1933.

EARL R. LINTHERR, M.D., Boston

"IONIZATION TREATMENT OF HAY FEVER"

To the Editor—The report on the ionization treatment of hay fever, by Ramirez (*THE JOURNAL*, January 25, p. 281) should be followed by reports from rhinologists who have had experience with this treatment. The ionization of the nasal mucosa is applied for two conditions—hay fever and hyperesthetic rhinitis. There is now sufficient evidence that in many cases this treatment has merit. Hollender of Chicago has used zinc ionization for perennial catarrh for some years with successful results. His experience has been corroborated by Hurd and myself in New York. At a recent meeting at the New York Academy of Medicine, a report from the Manhattan Eye, Ear and Throat Hospital was most encouraging.

During the 1934 hay fever season I had encouraging results in the treatment of hay fever by ionization. In a summary of the results in forty private cases before the Pan American Medical Association, I concluded as follows: "Although we are satisfied that zinc ionization of the nasal mucosa is worth while, it should be understood that no definite endorsement of the treatment should be given until one has a record of cases extending over a number of years. We are inclined to feel that no promise should be made in any case."

When I returned to America I again used ionization in a number of cases of hay fever. I was amazed and dismayed to find that hardly one case was relieved. It is impossible for me to give any reason. However, 90 per cent of the cases of hyperesthetic rhinitis were relieved.

I have great respect for the allergist. But how many allergists can claim that they have accomplished more than a seasonal

relief in cases of either hyperesthetic rhinitis or hay fever? This does not lead me to write a paper condemning the inoculation treatment. It has its place and I feel sure that ionization of the nasal mucosa has its place also.

HAROLD HAYS, M.D., New York

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

LOSS TO THE COMMUNITY FROM SYPHILIS

To the Editor—Are any figures available to show the economic loss to the community from syphilis? You quote Upton's statement that over a million patients with primary and secondary syphilis seek treatment yearly. What proportion of these become inmates of insane hospitals and what is the cost of caring for the early and late cases?

CHARLES E. WELLS, M.D., Randolph Mass

ANSWER—References to the economic cost of syphilis, collected from various sources or in the form of original statistics, are given by Thomas Parran Jr. (*Public Health in New York State*, published by the State of New York Department of Health, Albany, 1932, pp. 236-238) and by J. H. Stokes (*Modern Clinical Syphilology*, Philadelphia, W. B. Saunders Company, 1934, pp. 1103-1105 and 1309-1310). Parran says:

Based on an estimated attack rate of syphilis of 4.4 per 100,000 for upstate New York and 7.8 for New York City there would be 81,000 new infections per year. A moderate estimate of the cost per year for treating adequately a case of early syphilis is \$200. Hence adequate care for syphilis in New York State would cost around \$16,000,000 a year.

Outpatients—At the present time upstate clinics are admitting new cases at the rate of 5,000 annually and administering about 150,000 treatments. At a moderate estimate of the cost at \$2 per treatment this would be a \$300,000 service.

Institutional—In state institutions there are approximately 2,000 patients suffering from general paralysis. The cost of building and equipping state institutions is approximately \$4,000 per capita. Thus facilities in state institutions for the care of cases of general paralysis are valued at about \$8,000,000. The cost of maintenance, not including administrative cost or charges on investments is approximately \$400 a year per patient. The annual cost for the maintenance of 2,000 cases of general paralysis would be approximately \$800,000.

The above estimates represent only a small part of the economic loss of syphilis. Loss of income because of disability, hospital costs aside from mental disease hospitals and loss because of the shortened life span of those infected represent an enormous burden the total of which cannot be accurately estimated.

Stokes says:

Williams estimated that ten men insane from syphilis represented a net loss based on life expectancy of \$212 to \$248 in earning capacity and a cost to the state of Massachusetts of \$39,312. According to the census of 1910 there were 180,000 insane persons in the United States. Estimating 12 per cent of insanity to be due to syphilis and the experience of Massachusetts to be applicable to the country as a whole the economic loss in earning capacity and cost of care on the score of a single item in the total bill of syphilis would approximate \$467,000,000.

Parran estimates that the cost of adequately treating syphilis as a public health problem would be \$0.88 per capita annually. That the loss due to the shortened span of life of patients with dementia paralytica represents a cost of \$1.20 per capita and the loss due to death from other forms of syphilis represents more than \$10 per capita for the population of this country.

Figures on the cost of treating syphilis vary widely with comparatively recent publications on the subject by Keidel, Bromberg and Davis. Since such treatment costs represent forms of economic loss, the following summary of these authors' observations is quoted from Stokes:

An estimate of \$500 for the treatment of a syphilitic infection to standstill or cure has been followed by Keidel's figures of \$180 as minimum private rates for a period of fifteen months and an average rate of \$650. Two studies by Bromberg and Michael Davis indicate that private care ranges from \$273 to \$723 per case with a maximum of \$1,425 under individual private care. By an effective form of organization the rates can be reduced to \$135 with \$300 a fair average figure. The actual cost of treating a patient at the Johns Hopkins Hospital for syphilis amounts to \$1.03 per visit and with an average total of twenty-six visits over a period of twenty-seven months the patient with early syphilis must meet a cost of \$78.

With reference to the prevalence of neurosyphilis among inmates of insane hospitals, Parran (p. 237) estimates that dementia paralytica develops in from 2 to 5 per cent of the cases of syphilis. The average annual admission to state insti-

tutions for mental disease in up-state New York total 856 cases from this cause Stokes (p 1103) quotes approximately the same figures for the incidence of dementia paralytica from Mattauschek and Pilcz, Fischer, Pick and Bandler, and Furbush. The Metropolitan Life Insurance statistics quote the incidence of tabes and dementia paralytica as from 131 to 166 per hundred thousand. Kirby gives the hospital admissions for dementia paralytica in New York State over a period of years as 84 per hundred thousand. Marie gives the incidence of dementia paralytica in Egypt as 55 per hundred thousand. As a factor in neuropsychiatric work, dementia paralytica is rated by May as the cause of 11 per cent of 70,000 first admissions to forty-eight hospitals in sixteen different states in this country. Richards, in White and Jelliffe's textbook (quoted by Southard and Solomon), states that dementia paralytica constitutes from 5 to 7 per cent of all military cases of mental disease in the French, German, American and Russian armies.

The most recent figure released by the United States Public Health Service, apropos of the inquirer's quotation of figures of "over a million patients with primary and secondary syphilis seeking treatment yearly," is 518,000 new cases for 1934.

CHRONIC OSTEO ARTHRITIS

To the Editor—A man aged 60 complains of a snapping or cracking in his neck when he turns his head from side to side. This condition has existed for several years but has been more noticeable lately. Recently the back of his head and neck have been sore constantly. Examination reveals very slight tenderness on pressure over the cervical spines and the muscles to either side. When he turns his head the cracking sound is distinctly audible. There is no history of trauma and no stiffness or limitation of motion. Physical examination is otherwise essentially negative. Would roentgen rays be likely to reveal any positive changes? I would appreciate suggestions as to possible causes and method of treatment.

MD, New York

ANSWER—Many elderly people complain of these symptoms. The cause is almost invariably a low grade chronic osteoarthritis of the small lateral articulations of the cervical vertebrae. These are true joints, with capsule, ligaments, articular surfaces, synovial membrane and synovial secretions and they are affected by arthritis in the same manner and with the same results as any other joints.

In many cases, roentgenograms will show characteristic "hipping" of the bodies of the vertebrae, these osteophytes being most noticeable in the anterior edges in the lateral view. Such hippling also occurs in the actual articulations but cannot be seen as well in the roentgenograms.

When the head is rotated, crepitation occurs exactly as it occurs in arthritic knee joints.

The treatment of the condition is the removal of any obvious focus of infection, plus improvement of the general health and resistance. The use of autogenous or stock vaccines is still under discussion. Foreign protein injections have then advocates.

Moist, hot fomentations locally and acetylsalicylic acid will tend to relieve exacerbations. In severely painful cases, a Thomas collar or a well fitted steel and leather apparatus to immobilize the head and neck will afford immediate comfort. It need not be worn continuously.

The general tendency is toward improvement in most cases under treatment, with a high percentage of symptomatic cure.

FRACTURE OF THE JAW

To the Editor—An infected fracture of the inferior maxillary bone is hard to get and hold in place by various dental methods. There is an external fistula which has drained pus for several weeks. Dilute solution of sodium hypochlorite when introduced into the external fistula passes into the mouth by the teeth. Some small slivers of bone have been discharged from the external fistula. One passed up at the side of or between the front teeth. If no other method will hold the jaw together is it good surgery to drill holes into the jaw and wire it when pus is present? If not how soon will it be considered safe to do such an operation? The fracture is about 2 inches to the left of the median line. The external fistula goes to bone at the point of fracture.

MD New Mexico

ANSWER—In the case cited there are two problems to be considered. First the reduction of the fracture with the restoration of normal occlusion and second the control of the infection. The simplest and best method of reducing the fracture and restoring the normal occlusion is by the attachment of an Angle's ribbon arch to the upper teeth, using ligature wires on the bicuspids and molars and silk ligatures on the incisors. A similar piece of Angle's ribbon arch is attached to the lower

jaw, on the short fragment only, in the same manner. Small orthodontia rubber bands are then attached to the wires in the two jaws, and it will be found that by elastic traction the displaced fragment will be quickly drawn into place and held with complete immobilization. This method not only corrects the fracture but gives the patient considerable freedom in jaw movements, permitting the taking of soft foods and proper cleansing of the mouth.

The fistula should be irrigated once a day with an iodosaline solution, which is easily made by taking as a base physiologic solution of sodium chloride and adding thirty or forty drops of tincture of iodine to a glassful. Continued suppuration in a compound fracture is almost always due to dead bone. A roentgenogram should be taken to determine this point. It is sometimes advisable to allow these small sequestrums to work to the surface, where they can easily be removed, rather than under take a more pretentious operation.

The management of jaw fractures is outlined in THE JOURNAL, May 19, 1934, page 1655.

The proposed wiring of the bones should not be undertaken because in the first place it does not insure the restoration of occlusion and, because of the infection, the wires usually have to be removed, leaving a bad scar. The simple method of elastic traction will insure a perfect occlusion, requiring no operation and no anesthetic.

NONALLERGIC SOAP

To the Editor—Will you please inform me as to the name of the manufacturer of a nonallergic soap? S. E. WITT, MD, New York.

ANSWER—There probably is no such thing as a strictly nonallergic soap. Although every kind of soap contains one or more ingredients that sometime or other will cause trouble to the skin of certain individuals.

Some soaps especially those impregnated with chemicals seem to be more harmful than the milder ones but even the mild ones may cause some trouble.

The following materials, which are contained in some soaps have already been reported as causes of contact dermatitis. This list is by no means complete: oil of bergamot, boric acid borax, cottonseed oil, formaldehyde, hydrous wool fat, lilac, saponated solution of cresol, mercury compounds,orris root quinine, resorcinol, rice, phenol, coconut oil.

In general, it would seem safe to avoid highly scented or highly colored soaps. There seems to be some evidence that shaving soaps are less irritating, on the whole than are the ordinary toilet soaps.

FECAL FISTULA

To the Editor—What is the treatment medical or surgical of a fecal fistula that developed ten days following a resection of a sigmoid carcinoma with primary anastomoses? Kindly outline the immediate and remote treatment.

MD New York

ANSWER—The immediate treatment of a fecal fistula is directed primarily toward prevention of irritation and excoriation of the skin. The secretion of a fecal fistula following resection and anastomosis of the sigmoid, being in the left half of the colon, is more or less formed and not liquid. It is necessary, therefore, to change dressings only several times daily to remove the accumulated fecal discharge and cover the surrounding skin with a protective dressing of petrolatum, zinc oxide, 3 per cent tannic acid, powdered kaolin, or kaolin glycerin paste. If there is infection of the wound with redness and induration of the skin, this must be treated first by hot dressings and provision for adequate drainage.

The fistula itself, once established may be curetted and cauterized with phenol, silver nitrate the actual cautery or surgical diathermy to destroy the granulations or epithelium of the sinus. This is often sufficient to produce permanent closure. Injections of irradiated petrolatum or Beck's paste followed by irradiation have been reported successful in effecting closures.

Almost a third of the fistulas will heal spontaneously within six to eight weeks. The fistulas that persist do so chiefly because of two factors: obstruction within the bowel distal to the sinus due to a spur or growth and lining of the tract by epithelium or mucous membrane. These persistent fistulas require surgical excision. In deciding when a fistula should be closed one should be guided by the amount and character of the drainage, the inconvenience it causes, the condition of the surrounding skin and subcutaneous tissues and the patient's general condition. Approximately three months may be permitted to elapse.

The operative removal of a fistula consists in isolation of the whole tract from the skin to its entrance into the intestine, its separation from the skin and the intestine, and the closure of the resultant defects in the intestine, abdominal wall and skin.

The fistulous tract can be more easily followed if it is filled with an indigo carmine or methylene blue solution. During the operation the introduction of a probe facilitates the finding of the tract. As a rule however it is not difficult to trace the fistulous canal, because it is clearly differentiated from the surrounding tissue by its firmness and fibrous structure.

TIC DOULOUREUX

To the Editor—A white woman aged 64 has attacks of very severe knifelike pains in the right side of the head. These seem to radiate up from the right side of the neck where she has a large tumor. She has had an enlarged thyroid gland since she was 10 years old. Twenty years ago the enlarged gland was given eight roentgen treatments and became smaller. She has been feeling well till this year when she began having these very severe headaches. Drugs other than morphine seem to give no relief. The blood pressure is 190 systolic 100 diastolic but during an attack it goes to 220/100 and the heart becomes very irregular in rate and rhythm. Following an attack of this severe headache she will vomit consistently for three or four days vomiting as little as a teaspoonful of water. Examination of the neck reveals an enlarged thyroid extending from the left side across the neck to the right and the growth extends to the angle of the jaw. Pressure on the right side causes pain and continued pressure will set off an attack of the severe headache. The eyegrounds show multiple areas of retinal degeneration with degeneration in the macula of the right eye. (She constantly sees a dark spot floating in front of the right eye more so during an attack of headache.) The visual fields are contracted in both eyes. There are no choked disks. The headaches come about every five or six days. Please suggest a possible diagnosis and cause of the condition also drug treatment to control the headaches and finally treatment if any to help this patient. MD Pennsylvania

ANSWER—From the description given it would seem that the pain is of the nature of a tic douloureux rather than of a headache. For this reason a description of the distribution of the pain would have value. Study of the condition of the pupil during an attack should be made and observations of the relation of the increased hypertension to the attack, that is, whether it precedes or follows the onset. It is possible that as a result of the roentgen treatment there has been caused a sclerosis of the tumor tissues, with involvement of the carotid sheath and sympathetic fibers and perhaps also of the vagus. Increased intracarotid pressure like pressure on the tumor from without, from any cause might then cause irritation of the sympathetic fibers and thus give rise to pain. If further study gives any support to this hypothesis, the possibility of some form of sympathectomy should be considered. Whether any such operation is possible in this case must be determined after careful general and local examination. Consultation with an experienced neurosurgeon is certainly indicated.

TINNITUS AND VERTIGO

To the Editor—A man aged 57 has a great deal of trouble with dizziness. He gets attacks of tinnitus especially when he mounts a step ladder but he may have them when he is walking around and even while he is lying down. The duration of this trouble has been about a year and a half. Onset was gradual and the attacks have become more frequent and severe. There are no other complaints. He does not get nauseated nor does he have any headaches. Simply when he turns his head quickly the dizziness comes on and passes away in a few moments. The physical examination is essentially negative. He wears glasses. There is no nystagmus. The blood pressure is 140 systolic 82 diastolic. The chest and heart are normal and the urine and blood show no abnormalities. The Wassermann reaction is negative. There is no diminution in hearing. My impression is that the exact of the disturbance is in the labyrinth. Do you think my diagnosis is correct? What bothers me is the treatment. I have prescribed phenobarbital one-half grain (0.03 Gm.) twice a day and thyroid 1 grain (0.065 Gm.) daily which seems to have benefited the patient to some extent. I would appreciate any suggestions as to treatment. MD Minnesota

ANSWER—It is quite probable that the disturbance in this case originates in the labyrinth as suggested by the correspondent. The exact nature of the lesion however cannot always be determined but it may be of a vasomotor character. In some of these instances there is an allergic factor therefore it would be advisable to have complete tests made to determine whether any protein sensitization is present. Otherwise the use of a mild sedative such as has already been employed is often of benefit. So far as the tinnitus is concerned that also may be due entirely to an inner ear or auditory nerve involvement and in such a case the use of sedatives

is likewise sometimes beneficial. On the other hand, if there is any involvement of the middle ear or eustachian tube the application, after cocainization, of 1 per cent silver nitrate to the pharyngeal orifice of the eustachian tube several times a week sometimes diminishes the tinnitus. Years ago the late Dr. B. Alex. Randall of Philadelphia reported good results in cases of tinnitus from the application of 1 per cent ethylmorphine hydrochloride to the eustachian tube by means of a catheter. Tinnitus is only a symptom that may be due to lesions in the eustachian tube, the middle ear or the inner ear and auditory nerve, but the factors that are directly responsible may be not merely local but systemic, either because of changes in the blood itself, hypertension or subhypotension, or toxemias of various kinds arising from infection of the tonsils, teeth, gallbladder or gastro-intestinal tract. Careful study of the whole body is therefore needed in some of these instances, and consequently despite all efforts some cases respond poorly to all forms of treatment or medication, whereas others are quite amenable.

ALLERGIC EDEMA OF SCROTUM

To the Editor—Information concerning the possible cause and treatment of recurring attacks of edema of the scrotum will be appreciated. A man aged 49 married enjoyed excellent health until the past eighteen months when he began to have attacks of edema of the scrotum, coming on every two or three months and usually clearing up in the interval. They are of very sudden onset and never were associated with pain, itching or general symptoms until the last two times, when there have been general malaise and fever. The edema seems to involve only the skin and is symmetrical. The general examination is normal, including the serum Wassermann reaction. The genitalia are normal. There has never been fluid inside the tunica. There has never been a hernia on either side. He has had no operations except tonsillectomy and excision of fistula in ano. For many years he has had what has been diagnosed as eczema of the scalp and occasionally of the back. There is no other allergic history. He has never had a venereal infection. These attacks are not related to intercourse. MD Texas

ANSWER—On the information outlined the most likely diagnosis would be angioneurotic edema. The fact that the swelling is confined to the scrotum is quite in line with other cases of recurrent localized allergic swellings, such as one eye, the tongue, or a hand. The presence of eczema of long duration lends additional credence to the possibility of an allergic etiology for the edema.

The causes are varied and numerous. Food allergy is one of the most common. Drug sensitivities should be investigated. Contact allergens should also be considered. Allergic swellings on the basis of fungous sensitization secondary to trichophyton or monilia infection should be ruled out. Is it possible that the "eczema" has ringworm as an underlying basis? Finally, the question of focal infection needs attention, since many instances of angioneurotic edema are due to infections in the gallbladder, tonsils, teeth, prostate and disturbances in the gastro-intestinal tract. By history, examination, skin tests and elimination diets the etiology may be ascertained.

The treatment will, of course, be dependent on the etiologic factor that may be found. Until such time as the cause can be located or in the event of failure to determine such a cause, other therapeutic procedures may have to be tried. Peptone, 0.5 Gm. orally one-half hour before meals, is helpful in cases of food or gastro-intestinal origin. Parathyroid extract-Hanson (10 units) hypodermically, every day or two and then less often, will frequently control the condition. Autohemotherapy with from 10 to 20 cc of whole blood is often successful. Ephedrine may control the swelling temporarily.

DIAGNOSIS OF PARALYSIS AGITANS

To the Editor—What does the spinal fluid show in cases of paralysis agitans? Does laboratory examination reveal any other characteristics? Please omit name. MD Illinois

ANSWER—There are no characteristic spinal fluid changes in cases of paralysis agitans. The fluid is clear and is usually under slight pressure during the excitatory stage. There are no abnormal cells or unusual chemical changes in the fluid.

There are no definite laboratory observations in cases of paralysis agitans except for the pathologic changes and the associated conditions which may simulate Parkinson's disease. The pathologic changes usually affect the basal ganglions. Persons are attacked with this disease usually between the ages of 50 and 70 years. There is a degeneration within the striate body and the globus pallidus, causing atrophy of the ganglion cells and their fibers.

There are other forms of parkinsonism. Manganese produces severe degeneration in the basal ganglions. Carbon monoxide poisoning frequently attacks the basal ganglions, particularly

the anterior ends of the globus pallidus. The gas also affects other structures in the brain as well. The laboratory examination here consists of carbon monoxide determination of the blood. Trauma to the brain may attack the basal ganglions and produce the syndrome of paralysis agitans. Hemorrhage or softening leads to the formation of gross lesions in the basal ganglions.

EFFECTS OF NEOARSPHENAMINE

To the Editor—Is there any difference in the systemic effect of neoarsphenamine given intravenously and intramuscularly? The vision of a young woman with well marked optic neuritis is reduced to hand movements at 20 feet. To my surprise her physician told me that he was giving her neoarsphenamine intramuscularly. She has several hard and painful lumps on her back, the site of injection. I have never heard of neoarsphenamine being injected intramuscularly and am wondering if there is anything unusual especially as regards the eyes when so given.

O M CRENSHAW M D Lebanon Ky

ANSWER—Few syphilotherapists in this country have had experience with the intramuscular injection of neoarsphenamine because the local reactions from the mode of treatment are as a rule so severe that but few patients will tolerate more than one injection. Not infrequently necrosis and ulceration follow the intramuscular injection. In the early experience with neoarsphenamine many injections were given intramuscularly and many of these patients still carry these infiltrated nodules in their buttocks or intrascapular regions at the site of the injections. Reports from Europe indicate that the therapeutic use of the intramuscular injection of neoarsphenamine has a more pronounced effect on the serum reaction than does the intravenous injection. Colonel Harrison of London and Dr R L Sutton of this country have been advocates of this form of administering the neoarsphenamine, and a discussion of the mode of treatment will be found in the sixth edition of Sutton's book on 'Dermatology'.

PERFORATION OF NASAL SEPTUM

To the Editor—A white girl aged 12, came to me in August 1935 with a perforation in the anterior part of the nasal septum the diameter of which is 3 or 4 mm. In February 1935 she had severe lobar pneumonia from which she has recovered. Her mother says that ever since the pneumonia the girl has had trouble with her nose. When the perforation occurred is not known. It is painless and bleeds rather easily. The tissue around the perforation looks healthy. The general condition of the child is negative. There is no history of tuberculosis or syphilis either in the patient or in her family. The Kahn test for syphilis in the patient was 1 plus the blood of her father was negative and her mother's was reported doubtful probably negative. Scrapings from the perforation were negative for acid fast organisms. I hesitate to treat this girl for syphilis with no further evidence than I now have. I would appreciate any suggestions as to the further management of this case. What is the accepted treatment for this nasal perforation due to tuberculous?

M D Colorado

ANSWER—From the history as given and the site of the perforation in the anterior cartilaginous portion, it is most likely that the lesion is a traumatic (nontuberculous and non-syphilitic) one. Tuberculosis of the septum is exceedingly rare. Syphilis of the septum nearly always involves that part of the septum which contains bone in addition to cartilage, namely, the posterior half. The history that this condition followed a severe attack of pneumonia probably points to the time of onset, crusting may take place at these times, the patient is too sick for the proper nasal hygiene and may also pick the nose frequently. Under the circumstances, the simplest treatment here would be the best. The nose should be kept well lubricated with an oily preparation or petrolatum to reduce crusting and the margins of the perforation should be touched up with some such preparation as dilute silver nitrate or dilute trichloroacetic acid.

OBLITERATING VASCULAR DISEASE IN AGED

To the Editor—A man aged 68 has had a definite diagnosis of Buerger's disease. About a week ago when a blood count was made I found that he had an erythrocyte count of 5 770 000 and hemoglobin 99 per cent. Is this due to the disease or is he experiencing the beginning of polycythemia? I may also mention that for the past two weeks he has been suffering from dyspnea vertigo weakness and loss of appetite from which patients with polycythemia suffer.

C O ANDERSON M D St Petersburg Fla

ANSWER—A man, aged 68 who has occlusion of the major arteries of the extremities is more likely suffering from arteriosclerosis obliterans than thrombo-angitis obliterans or Buerger's disease. The occlusive process is a bland noninflammatory thrombosis in an arteriosclerotic vessel. In some patients with advanced forms of arteriosclerosis there is evidence of concentration of the blood, as demonstrated by moderately elevated

blood counts and by an increase in the concentration of hemoglobin and an increase in the percentage of cells as determined by the hematocrit. The blood changes are those of a relative polycythemia, not a true polycythemia. The spleen is not enlarged and the veins in the retina are not engorged, nor are the mucous membranes excessively red. It is likely that the symptoms of which this patient complained were due to arteriosclerosis of the cerebral and cardiac arteries rather than polycythemia. The cause of the blood concentration in arteriosclerosis is not clear. It was first described by Galsbrieh in association with hypertension.

STERILITY

To the Editor—Among my patients I have a young couple who are desirous of having a baby but after two years of trial have been completely unsuccessful. The woman is 28 years of age and states that she has had no venereal infection of any sort. The menstrual periods have always been regular and attended with cramps until a few years ago. Vaginal examination reveals a normal uterus normally placed. Smears of the vaginal tract show no gonococci but the smears are strongly acid to litmus paper. There is no abnormal discharge. Her husband is in good health and up until a few years ago was a rather heavy indulger in alcohol. There is no history of venereal infections. Microscopic examination of the semen shows a fair rate of motility but many of the sperm cells are motionless (The specimen was examined soon after intercourse). There is no hypospadias. I have advised abstinence for a period of a few weeks and then the use of alkaline douches just before intercourse. Can you advise any other methods I may suggest should these procedures fail? What is the present consensus as to which period in the menstrual cycle is the optimal time for conception to take place?

M D Ohio

ANSWER—A thorough investigation in accordance with the plan of Meaker will probably reveal one or more causes for reproductive failure. A postcoital test of the spermatozoa should be made from the vaginal vault and cervical canal, if a large number of living spermatozoa are recovered from the cervix, a test for the patency of the fallopian tubes should be made. If the results of these tests are satisfactory, the couple should be advised to hold intercourse at such time as is most likely to result in pregnancy, namely, in the mid month period. It is the present consensus that ovulation occurs from fourteen to fifteen days before the onset of menstruation. It is also believed by many that the ovum is susceptible of being fertilized for but two days and that a human spermatozoon can fertilize the ovum for no more than three days, therefore repeated cohabitation in the midmonth week appears to be logical advice.

SEXUAL HYPERSENSITIVENESS WITH COLON SPASTICITY

To the Editor—A man aged 40 unmarried has the following complaints: 1 Sexual hypersensitiveness. Since puberty he has been uncomfortable in the presence of women and has an erection. He therefore avoids riding in trolley cars and any other contact with women. It has had a serious economic effect. 2 A spastic colon corroborated by roentgen examination. When the colon symptoms are worse he feels sexually more uncomfortable. (Is his sexual symptom due to the colon or is it a separate condition?) 3 Weakness. He gets up tired in the morning cannot do strenuous work and gets tired early in the evening. He has had silver nitrate instillations in the urethra. The colon has been treated by a smooth diet rest and antispasmodic drugs. He would be satisfied if his sexual condition was relieved. This would enable him to do his work better and change his outlook on life. Please give your suggestions. He requires ten hours of sleep. His father sleeps as soon as he sits down even at meals (probably narcolepsy). Kindly omit name.

M D Pennsylvania

ANSWER—Sexual complaints such as those described are much more common in single than in married men. They bear evidence of nervous sensitivity. The so called spastic colon is another indication of hypersensitiveness of the nervous system. A condition in which much intestinal spasm and abdominal discomfort prevail is better known as an "irritable colon" associated with nervous fatigue. Both of these complaints at once suggest that the condition is not primarily one of malfunction of the intestine or the sexual organs but rather a part of a systemic disturbance. The sexual dysfunction, intestinal irritability and easy fatigue all point to a highly sensitive and easily disturbed nervous system.

Treatment should not be directed toward the relief of any of these symptoms singly but rather to the relief of the nervous fatigue. This will be best accomplished by adopting a well ordered program of rest and restful recreation, plenty of outdoor exercise, fresh air and sunshine, and some program of recreational diversion that will be pleasant for the individual. There are no drugs advocated for these conditions which offer more than transient relief.

PERSISTENT SUPERFICIAL INFECTION

To the Editor—A youth aged 17, injured the anterior surface of the right lower leg while playing football five years ago. The wound consisted of a rather insignificant abrasion which however developed into a severe infection with a high fever and an abscess formation in this vicinity which required drainage. There are now two scars about the size of a half dollar (30 mm). I first was called to see him about two years ago when he complained of pain in the region of these scars. He had a temperature of 104 F and there was considerable redness around the area with enlargement of the inguinal glands. The process subsided with rest, elevation and heat. This however recurs about every four to five months sometimes following a slight bump and sometimes without any trauma. Roentgenograms of the tibia and fibula are negative and the serology is normal. A careful search was made for any foci of infection but none were found. This trouble caused him considerable economic loss and my advice that you can offer on how to rid him of it will be appreciated.

M D Ohio

ANSWER—This patient's history suggests that there are virulent bacteria still present in the tissues which are reactivated from time to time and cause active inflammation. Although it is unusual for bacteria to remain in the tissues as long a time as is indicated by this patient's history, there is abundant evidence available to indicate that bacteria can remain viable in the soft tissue for over a year and in bone for a considerably longer period.

There is no direct method of attack available in the treatment of such conditions. To carry out any surgical operation would be a certain way of stirring up trouble. The patient would be best advised to do everything possible to safeguard his general health and to avoid any local traumatism or injury about the site of the original wound.

CONTROLLING ETHYLENE DANGERS

To the Editor—Will you please advise the general policies followed for having x-ray units in the surgical department where ethylene gas is used? We are contemplating revamping our surgical suite and if it is an acceptable policy to do so we are considering having our cystoscopic table with a Kenetrom transformer and control stand in a room adjoining one of our major operating rooms. This room to be used in combination with our fracture service. We have a fracture table and have just recently purchased a shock proof and ray proof mobile x-ray unit. Any information you may give us with reference to general policies followed in having x-ray service (such as I have outlined) in the surgical department where ethylene gas is used will be appreciated.

RALPH M HUESTON Joliet Ill

ANSWER—The most conservative and safest practice adopted by those with experience is to avoid ethylene oxygen anesthesia under conditions in which the use of an open flame electric cautery, radio knife or any electric sparking device is indicated. As the inquirer undoubtedly knows, intravesical explosions may have occurred during fulgurations of the urinary bladder owing to the liberation of explosive gases even when the anesthetic mixture used was simply nitrous oxide-oxygen. Had ethylene-oxygen anesthesia been used, every one would have attributed the explosion to that anesthetic. Everything considered, ethylene-oxygen ether or nitrous oxide oxygen-ether anesthesia should not be employed when the danger of ignition of these inflammable mixtures by sparking electrical apparatus is even remotely possible. Nitrous oxide oxygen is the only positively safe anesthetic to use under these conditions.

PHLEBITIS AFTER GONORRHEA

To the Editor—Sept 12 1934 a patient came in with all symptoms of an acute gonorrhea such as frequency, burning and a discharge. Two weeks later he developed a periurethral abscess which was incised and drained. This was followed with considerable edema of the foreskin which was incised several times. October 25 the left testicle began to swell accompanied by severe pain and several days later the left inguinal gland became swollen. Two weeks after the testicle began to swell the left leg became painful especially around the thigh. The whole leg down to the ankle became edematous to approximately one and one-half times the normal size. There was no pain on motion and no pains in the joints. The patient was in bed about seven weeks from October 25. In the meantime the discharge was continually present and positive until May 13 1935 when on resumption of urethral instillation sounds and massages the discharge became negative and stopped. Now after eight months the pain in the leg is less severe but still present and accompanied by a slight amount of edema. The veins around the posterior surface of the knee are dilated and prominent. What line of treatment would you suggest for the leg condition which is in my opinion a gonorrheal phlebitis? Kindly omit name.

M D New York

ANSWER—The swelling and pain in the legs is in all probability due to phlebitis the origin of which may have been gonorrhea. Although this is not common, rest, elevation and the application of moist heat plus the internal administration of iodides are indicated.

Medical Examinations and Licensure

COMING EXAMINATIONS

- ALASKA Juneau March 3 Sec Dr W W Council Juneau
AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Written examination for Group B applicants will be held in various cities throughout the country March 14 Oral examination for Group A and B applicants will be held in Kansas City Mo May 11 12 Sec Dr C Guy Lane 416 Marlboro St Boston
AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada March 28 Applications must be filed not later than February 28 Oral clinical and pathological examination of all candidates will be held in Kansas City Mo May 11 12 Applications must be received not later than April 1 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)
AMERICAN BOARD OF OPHTHALMOLOGY Kansas City Mo May 11 and New York Sept 26 All applications and case reports must be filed sixty days before date of examination Asst Sec Dr Thomas D Allen 122 S Michigan Ave Chicago
AMERICAN BOARD OF ORTHOPAEDIC SURGERY Kansas City Mo May 11 Applications should be filed with the secretary on or before April 1 Sec Dr Fremont A Chandler 180 N Michigan Ave Chicago
AMERICAN BOARD OF OTOLARYNGOLOGY Kansas City Mo May 9 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha
AMERICAN BOARD OF PEDIATRICS Kansas City Mo May 9 Sec Dr C A Aldrich 723 Elm St Winnetka Ill
AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY St Louis Mo May 8 9 Sec Dr Walter Freeman, 1028 Connecticut Ave Washington D C
AMERICAN BOARD OF RADIOLOGY Kansas City Mo May 8 10 Sec Dr B R Kirklin Mayo Clinic Rochester Minn
ARIZONA Basic Science Tucson March 17 Sec Dr Robert L Nugent Science Hall University of Arizona Tucson Medical Phoenix April 7 8 Sec Dr J H Patterson 826 Security Bldg Phoenix
CALIFORNIA Los Angeles March 9 12 Reciprocity Los Angeles March 18 Sec Dr Charles B Pinkham 420 State Office Bldg Sacramento
CONNECTICUT Regular Hartford March 10 11 Endorsement Hartford March 24 Sec Dr Thomas P Murdock 147 W Main St Meriden Homeopathic Derby March 10 Sec Dr J H Evans 1488 Chapel St New Haven
IDAHO Boise April 7 Commissioner of Law Enforcement Hon Emmitt Pfost 205 State House Boise
IOWA Des Moines Feb 25 27 Dir Division of Licensure and Registration Mr H W Grebe Capitol Bldg Des Moines
MAINE Portland March 10 11 Sec Board of Registration of Medicine Dr Adam P Leighton 192 State St Portland
MASSACHUSETTS Boston March 10 12 Sec Board of Registration in Medicine Dr Stephen Rushmore 413 State House Boston
MONTANA Helena April 7 Sec Dr S A Cooney 7 W 6th Ave Helena
NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II May 6 8 June 22 24 and Sept 14 16 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia
NEW HAMPSHIRE Concord March 12 13 Sec Board of Registration in Medicine Dr Charles Duncan State House Concord
NEW MEXICO Santa Fe April 13 14 Sec Dr E LeGrand Ward Santa Fe
OREGON Basic Science Portland March 21 Sec Mr Charles D Byrne University of Oregon Eugene
PUERTO RICO San Juan March 3 Sec Dr O Costa Mandry Box 536 San Juan
WEST VIRGINIA Charleston March 16 State Health Commissioner Dr Arthur E McClue Charleston
WISCONSIN Basic Science Madison April 4 Sec Prof Robert N Bauer 3414 W Wisconsin Ave Milwaukee

Texas November Report

Dr T J Crowe secretary Texas State Board of Medical Examiners, reports the written examination held in Houston Nov 18 20, 1935. The examination covered 12 subjects and included 120 questions. An average of 75 per cent was required to pass. Thirteen candidates were examined 12 of whom passed and 1 failed. Sixty-four candidates were licensed by reciprocity and 1 candidate was licensed by endorsement. The following schools were represented:

School	PASSED	Year (rad)	Per Cent
College of Medical Evangelists		(1935)	87
School of Medicine of the Division of the Biological Sciences		(1935)	90.3
Harvard University Medical School		(1933)	88.7
University of Nebraska College of Medicine		(1934)	86.4
Duke University School of Medicine		(1933)	91
Baylor University College of Medicine		(1931) 76 (1935)	79.7
Medizinische Fakultät der Universität Wien		(1934)	86.3*
Université Catholique de Louvain Faculté de Médecine		(1934)	85
Universidad Nacional Facultad de Medicina Mexico D F		(1934)	79*
Osteopath			77.1
School	FAILED	Year Grad	Per Cent
Escuela de Medicina de San Luis Potosi Mexico		(1935)	34.6
School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Arkansas School of Med	(1934) 4	(1935) 2	Arkansas
College of Medical Evangelists		(1930)	Minnesota
University of Colorado School of Medicine		(1934)	Colorado

George Washington University School of Medicine	(1910)	Dist Colum
Emory University School of Medicine	(1934)	Georgia
American College of Medicine and Surgery	(1905)	Illinois
Chicago Homeopathic Medical College	(1903)	Illinois
Northwestern University Medical School	(1931)	Minnesota
University of Illinois College of Medicine	(1934)	Illinois
Indiana University School of Medicine	(1923)	Indiana
University of Louisville School of Medicine	(1930)	Kentucky
Tulane University of Louisiana School of Medicine	(1929)	
(1931) (1932) (1934 4) (1935 2) Louisiana		
Johns Hopkins University School of Medicine	(1929)	N Carolina
University of Maryland School of Medicine	(1909)	Maryland
Harvard University Medical School	(1927)	Mass
Tufts College Medical School	(1930)	Michigan
University of Michigan Medical School	(1933)	Michigan
University of Minnesota College of Homeopathic Medicine and Surgery	(1908)	Minnesota
University of Minnesota Medical School	(1929)	Minnesota
St. Louis University School of Medicine	(1925)	Missouri
Washington University School of Medicine	(1929)	
(1930), (1934) Missouri		
Long Island College Hospital	(1929)	New York
New York Homeopathic Medical College and Flower Hospital	(1919)	New York
New York University University and Bellevue Hospital Medical College	(1921)	New York
Ohio State University College of Medicine	(1924)	Ohio
Toledo Medical College	(1901)	Ohio
University of Cincinnati College of Medicine	(1935)	Ohio
University of Oklahoma School of Medicine	(1934 3)	Oklahoma
Meharry Medical College	(1933) Kansas (1934 2)	Tennessee
University of Nashville Medical Department	(1908)	Louisiana
University of Tennessee College of Medicine	(1916)	Tennessee
Vanderbilt University School of Medicine	(1910)	Missouri
(1920) Louisiana (1934) Tennessee		
Universidad de la Habana Facultad de Medicina y Farmacia	(1920)	Florida
Universitat Koln Medizinische Fakultät Osteopathist	(1921)*	Wisconsin
	Iowa 2	Missouri 3
	Year Endorsement	Grad of
School		(1911) U S Navy
University of Texas School of Medicine		
* Verification of graduation in process		
† Licensed to practice medicine and surgery		

District of Columbia Reciprocity Report

Dr George C Ruhland, secretary, Commission on Licensure reports 15 physicians licensed by reciprocity from Oct 15 through Dec 11, 1935. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Georgetown University School of Medicine		(1923)	
(1932) New Jersey, (1933) Maryland Virginia			
Howard University College of Medicine		(1923)	New York
(1932) Georgia (1932) (1933) Maryland			
State University of Iowa College of Medicine		(1924)	Iowa
Johns Hopkins University School of Medicine (1925)		(1928)	Maryland
(1931) Michigan			
Washington University School of Medicine		(1912)	Missouri
Jefferson Medical College of Philadelphia		(1915)	Penna
University of Virginia Department of Medicine		(1926)	Virginia

Kansas December Report

Dr C H Ewing, secretary, Kansas State Board of Medical Registration and Examination, reports the written examination held at Topeka, Dec 10-11, 1935. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Eleven candidates were examined, all of whom passed. Nineteen physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of Colorado School of Medicine		(1928)	85
Howard University College of Medicine (1934)	88.2	(1935)	84
Northwestern University Medical School		(1935)	87
Rush Medical College		(1935)	83.1
Creighton University School of Medicine		(1933)	82.9
University of Nebraska College of Medicine		(1935)	88.5
University of Oklahoma School of Medicine		(1934)	84.5
University of Oregon Medical School		(1934)	88.6
Meharry Medical College		(1935)	84
School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
College of Medical Evangelists		(1931)	California
Northwestern University Medical School		(1929)	Missouri
University of Illinois College of Medicine		(1932)	Illinois
Geokuk Medical College Iowa		(1899)	Iowa
State University of Iowa College of Medicine		(1927 2)	Iowa
Johns Hopkins University School of Medicine		(1912)	Maryland
University of Minnesota Medical School		(1928)	Minnesota
(1929) North Dakota			
University Medical College of Kansas City		(1900)	Missouri
Creighton University School of Medicine		(1932)	Nebraska
John A Creighton Medical College		(1917)	Montana
University of Nebraska College of Medicine (1935)		(1934)	Nebraska
Western Reserve University School of Medicine		(1930)	Ohio
University of Oklahoma School of Medicine		(1934)	Oklahoma
Meharry Medical College		(1933)	Tennessee
Vanderbilt University School of Medicine		(1902)	Tennessee
University of Wisconsin Medical School		(1913)	Wisconsin

Book Notices

Obstetrical Practice By Alfred C Beci MD Professor of Obstetrics and Gynecology Long Island College of Medicine Cloth Price \$7 Pp 702 with 1,043 illustrations Baltimore Williams & Williams Company 1935

This new textbook on obstetric practice is presented by a prominent educator in this field. His pedagogic skill is amply evidenced by the clear, logical presentation of his subject to the student and young practitioner. The various chapters present chronologically the story of the various birth processes and their pathologic complications. The ideas are in line with modern scientific advances. All debatable, questionable or theoretical ideas have been omitted for the sake of conciseness. The chapter on antepartum care covers the field completely, emphasizing the great value of this form of prophylactic obstetrics. The mechanism of labor in all the varieties of presentation and position are thoroughly discussed and profusely illustrated. The author feels that a proper understanding of this subject will result in fewer pathologic conditions, with the resultant decrease in maternal and fetal mortality and morbidity. For the same reason a long chapter is devoted to a complete discussion of the medical and surgical complications of pregnancy. There is a lack of relative value in the space devoted to various subjects. Thus one finds forty pages devoted to an excellent discussion of face presentation, which, according to the author, occurs once in 250 labors, while thirteen pages are devoted to a too brief discussion of all the toxemias of pregnancy, and eleven pages to the ever increasingly important problem of abortion. The chapter on operative obstetrics is placed at the end of the book. The various operations are described briefly, although carefully illustrated, emphasizing the view that operative obstetrics should be reserved for the specialist who has had additional training. All the chapters are profusely illustrated. The drawings have been done by the author himself and retouched by an artist. Their uniformity, clarity and number do much to help the teaching value of the text and improve greatly the general appearance of the book. Throughout the book one finds pictures and short biographies of the many interesting personalities that have slowly evolved the science and art of obstetrics. An excellent, selected bibliography follows each chapter. This book can be heartily recommended for students and young practitioners.

Lactobacillus Acidophilus and Its Therapeutic Application By Leo F Rettger Ph D LL D Professor of Bacteriology in Yale University Maurice N Levy MD Louis Weinstein Ph D and James E Weiss Ph D Cloth Price \$2.50 Pp 203 New Haven Yale University Press London Oxford University Press 1935

This book should be good, seeing that for twenty years the senior author has been studying intestinal bacteriology and particularly the problem of implanting acidophilic organisms in the bowel.

It is interesting now to learn that *L. bulgaricus*, which for so many years was sold widely and bruted about as a wonderful rejuvenator of mankind, not only does not become implanted in the bowel but actually is rapidly destroyed there. Surely the physician who knows anything about the history of therapeutics will always outdoubt St Thomas when there comes to his desk the first enthusiastic description of marvelous cures obtained with some new drug and as some wag once advised, he will hurry to use the new drug while it is still curing. How annoying it must be to the men who have bragged about a wonderful new cure for let us say nausea, to have some pharmacologist come along and show that the drug is really a mild emetic.

Dr Rettger's enthusiasm is all for *L. acidophilus* which he is sure can be implanted in the bowel under certain definite and essential conditions. In the first place enormous numbers of active living bacilli must be given. According to Rettger most of the preparations on the market contain only a few half dead organisms. But even if the bacteria in the little tablets and bottles were all viable there would still be too few to make any change in the intestinal flora. In the second place, the strain used must be one that is adapted to life in the intestine, and in the third place, the culture must not have been maintained too

long on artificial mediums. The bacterium is one that is highly adapted to its natural medium, and it loses this specificity when, after several transplantings, it learns to live in the test tube. Finally it is essential that from 200 to 300 Gm of dextrin or lactose be given daily so as to modify the pH of the colonic contents.

As Rettger says, in their attempts to use acidophilic bacteria therapeutically few physicians have taken the trouble to fulfil all the necessary conditions, and as a result there has "been an undermining of confidence in the principle involved."

Another great difficulty arises when one comes to the matter of choosing patients suitable for this type of treatment. The reviewer must admit that he has always been much puzzled to know what type of patient would most probably be helped. He has never been able to learn enough about the intestinal flora to know when he wanted it changed or how he wanted it changed. The wise physician does not want to burden people with a troublesome and expensive type of treatment unless there is a large probability that it will do them some good. The writer of this review has found it possible to try out lactobacillus implantation only when he could secure the help of a trained bacteriologist. First, much time had to be spent in maintaining active cultures of an organism which is often hard to grow. Secondly, the milk had to be sterilized and then heavily seeded with the lactobacillus. Finally the patients had to go to the trouble of sending to the laboratory at frequent intervals to get their supply of the product.

When a mountain has to labor to this extent, it usually wants to know what kind of a mouse is to be brought forth. According to the book before us, three out of four of a few patients with simple constipation were helped, and this improvement lasted for from twelve to sixteen weeks following discontinuance of the treatment. Good results were seen also in a few patients with "constipation with biliary symptoms," whatever that means. Three out of four patients with mucous colitis were helped, and seven out of eight patients with ulcerative colitis showed improvement in spite of the fact that in none of them was there an implantation of the lactobacillus. Patients with mucous colitis and ulcerative colitis received benefit only so long as the treatment was being carried out.

We of the medical profession should feel deeply indebted to Dr. Rettger for debunking this form of treatment, which has been so badly misrepresented since the days of Metchnikoff and for showing us how useless it is to give lactobacilli unless the procedure is carried out by experts who will check every stage to make sure that they are doing what they planned to do. Finally we must thank Rettger for his frankness and honesty in saying that, so far, the treatment has been found useful temporarily in such illnesses as constipation and mucous colitis, which can be controlled fairly well in simpler and much cheaper ways.

The Single Woman and Her Emotional Problems. By Laura Hutton, B.A. M.R.C.S. L.R.C.P. Physician, Institute of Medical Psychology. With a foreword by David Forsyth, M.D. D.Sc. F.R.C.P. Cloth. Price \$2. Pp. 151. Baltimore: William Wood & Company, 1933.

This little book should be in the library of every physician, psychologist, sociologist, teacher, clergyman, in short, all those who come in mental contact with the large and increasing class of women whose problems stimulated Dr. Hutton to write the book. Not only teachers and advisers can profit from a careful study of this short, concise, well written manuscript but there are few women who could not profit through assimilating some of Dr. Hutton's sympathetic objective and accurate analysis of the reality situations to be faced, the need for help and guidance to these women who are intentionally or unintentionally single. In the preface Dr. Hutton says "Explanations of the psychological meaning of certain types of behavior or symptoms need always to be approached with the utmost care and gentleness—sympathy, understanding and respect for personality above all undisturbed by any fear or condemnation of sexual manifestations in whatever guise they may appear are essential and this principle holds throughout whether we are dealing with physical symptoms which are recognized as being expressions of emotional and particularly psychosexual conflicts and repressions or with explicit psychological difficulties." Dr. Hutton does just that lucidly, clearly and in a frank,

straightforward manner. The book contains five short chapters devoted chronologically to (1) the single woman of today—a historical and present-day analysis of the situation, (2) emotional friendships and some of the psychologic problems involved—a discussion of normal and abnormal friendships among women, (3) sexual problems—those confronting the single woman, (4) sexual inversion, (5) adjustments. Dr. Hutton quotes or refers to several well known psychoanalysts and gives credit to their views. The book is in no way dogmatic or critical unless it be of the adviser and teacher who is utterly lacking in insight and attempts to be pedagogic rather than understanding and unbiased. Dr. Hutton is an English physician and while the book is primarily written for and about the English situation, the problems discussed are equally relevant in this country.

Précis de chimie biologique médicale. Par Paul Cristol, professeur de chimie biologique et médicale à la Faculté de médecine de Montpellier. Cloth. Price 80 francs. Pp. 638 with 13 illustrations. Paris: Masson & Cie, 1933.

This is a good textbook of biochemistry for medical students. In the introduction the historical aspect is first emphasized and the relation of biochemistry to various interests is briefly referred to. The first chapter presents elementary information on the physical chemical relations, such as ionization, osmotic pressure and the colloidal state. A chapter on elementary composition contains some interesting data on the quantitative distribution of inorganic constituents. After another chapter of general nature devoted to the organic composition and classification, the more systematic treatment follows. A good chapter on hydrocarbons presents the more important information on the chemistry and function of hydrocarbons in plants and animals. Part II covers in thirteen chapters the chemistry and metabolism of carbohydrates and the terminology and evaluation of acidity and pH . The structural relations between the different monosaccharides and between the tautomers involved in the action of bases and in mutarotation are not presented clearly. The actions of strong mineral acids on carbohydrates and of bromine on reducing sugars are not adequately covered. It is also rather unusual to discuss the asymmetrical carbon atom after considerable material has been presented which involves its knowledge. The synthesis of carbohydrates in plants, the various fermentations of carbohydrates, and the changes in the digestive tract and blood sugar and its regulation are well presented. The biochemistry of diabetes is given well with the exception of the ketogenic and antiketogenic values of various foods. While the basis of pH terminology is given clearly, the development of the buffer action in tissues and body fluids is given too simply. Part III in three chapters covers lipins. The treatment of phospholipins and cerebrosides is very brief. The chemistry of sterols, bile acids and related compounds is treated fairly well but the information on vitamin D and sex hormones is not as critical and complete as one might desire. Curiously Brown-Sequard is the only one referred to in connection with the internal secreting function of the gonads. Part IV, in twelve chapters, covers the chemistry and metabolism of proteins. With the exception of too brief a treatment from the physicochemical point of view, the discussion on this phase is very satisfactory. Each chapter is preceded by a good summary, and an excellent subject index is provided.

Radium Treatment of Skin Diseases. New Growths. Diseases of the Eyes and Tonsils. By Francis H. Williams, M.D. Senior Physician, Boston City Hospital. Cloth. Price \$2. Pp. 118 with 12 illustrations. Boston: Stratford Company, 1933.

In this book Dr. Williams limits himself in subject matter to those details of radium treatment with which he has had particular personal experience. The opening chapters are devoted to a discussion of some of the physical properties of radium and a detailed description is given of the fluorometer, an instrument devised by the author, with which he was able to measure comparatively the beta ray penetration of radium in water layers of varying thickness. From the measurements obtained he lays down some of the principles that guide him in radium treatment. Approximately the latter two thirds of the book recounts the results of Dr. Williams' experience with radium particularly as applied to a limited group of lesions of

the skin, eye and throat. Descriptions and photographs of instruments developed and used by the author are included with the text, as well as details of the technic of application. In general, it may be said that the author's observations are not only clear and easily understandable but also borne out by the experience of other radium therapists, working elsewhere. The past twenty-five to thirty years has furnished sufficient evidence to corroborate beyond all doubt the truth of the general laws and principles laid down by Dr. Williams. As an approach to the broader subject of radium therapy as now generally practiced the book may prove misleading, in that the action of gamma rays is minimized and most radium therapists are not treating infected tonsils or cataracts with radium at this time. The impression might conceivably be formed by the reader that radium is effective almost entirely as a result of the action of beta rays. This volume will no doubt prove of most interest and value to one already familiar with radium and its use, since its emphasis is on a limited field of radium therapy and development of technic as applied to these particular conditions by Dr. Williams. Generally speaking, the book is of interest and presents the experience, methods and technic of one individual in a limited field. It presents many of the problems that confronted the early workers with radium and the author's methods of solving these problems. The book is interesting reading but gives too little space to the more recent advances in the use of radium to be of much aid in the practice of radium therapy in the more commonly accepted methods and technic today.

Handbook of Bacteriology for Students and Practitioners of Medicine
By Joseph W. Bigger, M.D., Sc.D., F.C.R.P.I., Professor of Bacteriology and Preventive Medicine, University of Dublin. Fourth edition. Cloth. Price \$4.25. Pp. 458 with 93 illustrations. Baltimore: William Wood & Company, 1935.

This book was the outcome of some dissatisfaction with the larger textbooks on bacteriology frequently expressed to the author by medical students. His object in writing a book was therefore to supply accurate information on bacteriology in a form suitable for students. That he has done so is indicated by the fourth edition of his book published in ten years and further by the appearance in 1935 of the first Spanish edition. The author appears to have included in the latest edition all the advances in bacteriology that appear sound and of importance to medical students. By deleting less important material he has kept the book to exactly the same number of pages as the previous edition. There have been added also a number of colored plates and nine new illustrations, two thirds of the pages in this edition have been changed to bring the book down to date, so rapid have been the advances in bacteriology in the three and a half years since the third edition came out. Its handy size is an advantage to students who have many books to carry about.

Experimentelle Untersuchungen über Amöbenruhr. I. Teil. Krankheitsverlauf bei künstlicher und spontaner Übertragung der Amöbiasis. Von Dr. Oskar Wagner. Beihefte zum Archiv für Schiffs- und Tropenhygiene, Pathologie und Therapie exotischer Krankheiten. Band XXXIV. Beiheft 1. Gegründet von C. Mensse. Herausgegeben von P. Muhlens, Direktor des Instituts für Schiffs- u. Tropenkrankheiten, Hamburg. Paper. Price 3 marks. Pp. 48 with 6 illustrations. Leipzig: Johann Ambrosius Barth, 1935.

A human strain of *Endamoeba histolytica* retained its virulence after having been transferred for eight years, intrarectally from kittens to kittens, from kittens to dogs, and vice versa. Similarly, cultures of *Endamoeba histolytica* failed to lose their virulence. In kittens the disease ran a rapid course, with incubation period very short, about two days in the majority of cases, followed by a bloody diarrhea, loss of weight and appetite, and finally death after several days. Ninety per cent of the young kittens died within five days after onset of the symptoms. Older heavier cats were less frequently infected and lived longer. Old heavy cats occasionally recovered spontaneously. Of 1,553 infected cats, forty-three recovered spontaneously. Young kittens never recovered spontaneously. Young puppies (60 per cent from 2 to 3 months old) were more easily infected than old dogs which recovered spontaneously. With the increase in age and size dogs become more resistant to infection with *Endamoeba histolytica* than cats. In dogs the symptoms were much milder and spontaneous recovery much quicker than in cats. Liver abscesses were also less frequent. Occasionally young dogs developed amebic ulcers of the

small intestine and stomach, showing trophozoites in the bloody mucous secretions. Attempts were made to infect rats, monkeys, guinea-pigs and rabbits, but without success. Healthy monkeys as well as rats harbor amebas similar to *Endamoeba histolytica* except that they were unable to produce amebic dysentery in kittens from amebas obtained from these sources. Young puppies became spontaneously infected when exposed in a cage with an infected puppy whose stool showed trophozoites of *Endamoeba histolytica*, but no cysts. Dogs became infected in nature through ingesting human feces containing *Endamoeba histolytica* cysts. By feeding experiments in which only trophozoites of *Endamoeba histolytica* were used, young puppies and kittens became infected. Feeding *Endamoeba histolytica* cysts to a cat and dog resulted, after a long period of incubation (from fifteen to forty-five days), in infection.

Eat, Drink and Be Wary. By F. J. Schlink. Cloth. Price \$2. Pp. 322. New York: Collier, 1935.

This is a typical example of the output of Mr. Schlink as a leader of Consumers' Research. Encouraged, no doubt, by the public reception given to "100,000,000 Guinea Pigs," Mr. Schlink continues to strain at sensationalism in his desire to hold his audience. Unfortunately Mr. Schlink is a chemist by training and not a physician and he is apparently utterly unable to evaluate scientific medical evidence properly. For example Dr. Eddy in *Good Housekeeping* has told readers that there are no dangers from poisons in modern enamels on cooking ware, Mr. Schlink tells them that Consumers' Research has found poisons in enamels. Of course, the significant fact is not that there are poisons in enamels but whether or not such poisons in enameled cooking ware possess any real potentialities for poisoning those who use the cooking ware. This is the difference between the chemical and the biologic approach. Dr. Eddy in *Good Housekeeping* says that gelatin is a good protein. Mr. Schlink comes forth with the old bugaboo that gelatin is made from hoofs and hides and he insinuates, therefore, that it is not a good protein. Sausage is made from portions of meat that used to be thrown to the fertilizer, yet the Eskimos have proved to us that most of the glands and entrails are valuable in the diet. Liver used to be cat meat and is now more valuable than steak. It would be easily possible to go through this entire book page by page and to point out similar exaggerations and misinterpretations of scientific evidence.

Mr. Schlink continues to quote profusely from *THE JOURNAL* and other American Medical Association publications, in fact the majority of his material comes from these sources yet he does not hesitate to bite the hand that feeds him and to quarrel with some of the official bodies of the American Medical Association on points concerning which he himself is not competent to judge satisfactorily.

For those who are really serious about securing real information on the physiology of foods and digestion, the book by Mr. Schlink cannot be recommended. To those who want their imaginations titillated by muckraking, Mr. Schlink's book will probably be welcome.

International Bibliography on the Problems of Blood Transfusion and the Theory of Blood Groups, 1900-1933. Edited by Dr. E. Koenig and Prof. E. Hesse. [In Russian, German, English, French and Italian.] Paper. Price 12R. 50k. Pp. 226. Leningrad: Research Institute of Blood Transfusion, 1935.

This bibliography presents the titles of 4,423 articles on blood transfusion published in the world literature since 1900. Titles of papers published in English, German, French, Italian or Russian are printed in the original language. The Russian publications are printed in Russian and German. Titles of papers from sixteen other countries are printed in German. The enormous material is divided into twenty-two groups and seventy-seven subgroups. For instance the whole literature on blood groups is given on seventy-three pages, with 1,861 titles. Papers on technic and indications are quoted in the same exhaustive manner. No article is reported in more than one section but at the end of every section the corresponding numbers of articles previously referred to are cited. Thus easy access to the world literature is given to anybody who is interested in any phase of blood transfusion. Investigation of the previous publications on the different problems of blood

transfusion can be carried out now in the shortest time, instead of days or weeks spent in looking up the literature. This bibliography is a monumental work. The authors should be congratulated on their brilliant accomplishment. In recent years a great deal of new and original work on blood transfusion has originated in Russia. This book expresses the active interest which our Russian colleagues take in the popularization of blood transfusion.

Medicine for Nurses By W. Gordon Sears, M.D., M.R.C.P., Deputy Medical Superintendent, St. Charles Hospital, London. Cloth, Price \$3.25. Pp. 412 with 46 illustrations. Baltimore: William Wood & Company, 1935.

This is a treatise based on a series of lectures to nurses. The material is written in a compendious style with additions made to emphasize the importance of nursing in the various conditions. Apparently irrelevant material is included to cover the possibility of future examination questions. In several instances the treatment and prophylactic measures detailed are not the most modern. For instance, toxoid in diphtheria is not mentioned, gauze dressing on a vaccinia pustule is advocated, nasal catheter administration of oxygen in pneumonia is described as a method of choice, and active immunization against scarlet fever is omitted. Except for these few shortcomings, the volume is easily readable, covering a large subject well within the grasp of individuals who have not had a sufficient medical education.

Social Problems of the High School Boy By Alba M. Lyster, Chairman, Arts and Sciences, the Vocational and Technical School, San Antonio, Texas, and Gladys T. Hudnall, Chairman, Home Economics, Austin Senior High School, Austin, Texas. Reviewed for educational value by Benjamin Lloyd Pittenger, Ph.D., Dean of the School of Education, The University of Texas, Austin. Cloth, Price \$1.75. Pp. 340 with 71 illustrations. Austin, Texas: Steel Company, 1935.

This book is intended to help the high school boy make his social adjustments. The reviewer and his wife have gone through it more or less carefully expecting to find a whole lot of prissy directions concerning the fine points of etiquette which would be practiced only in the upper brackets of society. They found little or nothing of the sort. Instead here are things that every boy should know. He is given the principles of physical health and something concerning the food he should eat, manners are discussed in considerable detail, the boy is instructed in the principles by which he may choose and wear his clothing, he is given a great many hints as to how to decorate his room, there are many suggestions about the choice of a vacation, he is told how to cook simple foods in case his mother or his wife should be ill, the choice of a mate is sensibly discussed, his relation to other boys and to girls is taken up in a logical and attractive manner. The information in this book will be a tremendous aid in making the transition from high school boy to useful man. Every high school boy and his parents should have a copy of it.

Restauration et prothèse maxillo faciales. Fractures—portes de suture—différentes Par les D^{rs} Ponroy et Psaume, médecins du centre maxillo faciale de Paris. VIII. La pratique stomatologique, publiée sous la direction du Dr. Chompret. Préface du Professeur Fernand Lemaître. Cloth, Price 30 francs. Pp. 502 with 338 illustrations. Paris: Masson & Cie, 1935.

This is the eighth in a series of nine volumes on the practice of stomatology. It contains a wealth of detail and should prove an excellent reference volume for the dental surgeon primarily. The lower jaw is considered in the first part. Line drawings are used exclusively except for reproductions of two roentgenograms and four photographs of two patients. Infinite detail of dental fixation is given and illustrations of many different ideas of splinting and the application of prostheses. Roentgen examination is covered in less than half a page and no diagnostic reproductions are shown. The only two roentgenographic reproductions in the entire book are of a graft across a defect of the body. The second part covers the upper jaw and has a short treatise on cleft palate. The third part considers the covering of the face and includes illustrations of one nasal reconstruction. Many excellent individual procedures may be found throughout the book with special reference to mechanical features. It might serve the purpose for the general or oral surgeon of giving a better outlook on the dental problems involved otherwise the actual management of jaw fractures may be found more practically explained elsewhere.

Outlines of General Psychopathology By William Malamud, M.D., Professor of Psychiatry, State University of Iowa. Cloth, Price \$5. Pp. 462. New York: W. W. Norton & Company, Inc., 1935.

In this book the author presents systematically a consideration of abnormal mental activity. His presentation is based on actual case reports. In the course of his presentation he outlines the various new conceptions, including behaviorism, freudianism, individual psychology and similar doctrines. In his presentation he develops a psychologic nomenclature. Whereas his table of contents seems abnormally abstruse and difficult, the book itself is easy to read, direct in its approach, and quite comprehensive. It is the kind of volume that may be cheerfully recommended to the general practitioner who wants to orient himself in a field in which most writers are confusing.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice—Abandonment of Patient, Scope of Experimentation in Medicine—The plaintiff, because of a swelling of his left knee, consulted the physician defendant, who took a history of the case, examined his patient manually, and made a diagnosis of sarcoma. He placed his patient on a diet and one week later gave him "an antitoxin injection." Whether the injection was made into the supposed sarcoma or intravenously, or otherwise, the decision does not disclose. About four days after the injection the skin over the swelling broke open, and a cauliflower mass developed. The defendant dressed the sore with sterile gauze bandages, applied boric acid, and used "pheno isolin,"¹ with morphine to relieve pain. The defendant then—after, the record implies, promising to return—discontinued attendance. The mass of diseased tissue had by that time increased in size and was discharging large quantities of pus, and the plaintiff consulted another physician.

This second physician sent him to a hospital, where roentgenograms were made and a Wassermann test, and where tissue from the diseased area was examined microscopically. Chiefly on the basis of a positive Wassermann test, the lesion at the knee was attributed to syphilis and diagnosed not as a sarcoma but as a gumma. Antisyphilitic treatment was then administered, followed by immediate improvement. The plaintiff returned to work, but he continued to suffer pain and his left leg remained crippled and stiffened. He sued the physician who first treated him, the defendant in this case, claiming that the defendant was negligent in that (1) he failed to exercise the degree of care and skill required of him, (2) he did not use roentgen rays to aid in making a diagnosis, (3) he did not take specimens of tissue for microscopic examination, (4) he injected poisons or harmful drugs "into the blood stream," and (5) he abandoned the plaintiff without cause. The jury returned a verdict of \$25,000 in favor of the plaintiff, which the trial court thought excessive, and with the consent of the plaintiff judgment was entered for only \$7,000. The defendant thereupon appealed to the Supreme Court of Michigan.

The physician defendant contended that the admission of mortality tables in evidence in proof of the plaintiff's impaired earning capacity was error, because the plaintiff was in ill health when the physician-defendant was called to attend him and therefore did not belong to that class of persons whose lives form the basis of such tables. The Supreme Court agreed that the admission of mortality tables in evidence under such circumstances was error as the expectancy of life stated in them is based on the lives of healthy individuals, but the court was of the opinion that by the reduction of the verdict from \$25,000 to \$7,000 the error had been cured, since the error affected only the amount of the verdict.

The charge of the trial court that if the physician defendant promised to return to see the plaintiff and never did so, but

¹ A proprietary drug, not an antitoxin but shown by analysis to consist essentially of turpentine, camphor, menthol, and resin dissolved in oil. Condemned as misbranded under the U. S. Food and Drugs Act. See food inspection decision No. 23230. U. S. Dept. of Agriculture.

abandoned him, and damage resulted from that conduct, and that if such conduct was not in accordance with the usual and ordinary practice of physicians in the community and in similar communities, the physician-defendant was liable, the Supreme Court held was correct. The court concluded "When a physician takes charge of a case and is employed to attend a patient, the relation of physician and patient continues until ended by the mutual consent of the parties, or revoked by dismissal of the physician, or the physician determines that his services are no longer beneficial to the patient and then only upon giving to the patient a reasonable time in which to procure other medical attendance." The question of abandonment in this case was in dispute and was properly left to the jury.

The record shows, said the Supreme Court that when the physician-defendant made the manual examination of the plaintiff, the plaintiff had symptoms that would lead a physician to suspect cancer, syphilis, simple tumor, abscess or tuberculosis. The usual practice among physicians in the community in diagnosing the cause of a swelling such as the one on the plaintiff's knee at the time was not only to take a history of the patient but also to have a roentgenogram made, a blood test made and a microscopic examination of the tissues. A physician is bound to follow the usual and ordinary practice of physicians of ordinary learning, judgment or skill in his own or similar localities. In this case, which was not an emergency case, the defendant did not use ordinary diligence in availing himself of various methods of diagnosis for discovering the nature of his patient's ailment, such as were used by physicians of skill and learning in the community in which he practiced, and he must therefore, in the opinion of the Supreme Court be held liable for the damage due to his negligence. The Supreme Court recognized, however, 'that, if the general practice of medicine and surgery is to progress, there must be a certain amount of experimentation carried on but such experiments must be done with the knowledge and consent of the patient or those responsible for him, and must not vary too radically from the accepted method of procedure.'

The physician-defendant requested the trial court to instruct the jury not to consider the charge that the defendant injected a harmful or poisonous drug into the plaintiff's blood stream, because there was no evidence to support such a claim. The trial court, however, charged the jury that it was alleged in the declaration that the plaintiff had done so and stated that there was some testimony tending to support the allegation. A search of the record, said the Supreme Court, fails to disclose any evidence that the injection given to plaintiff by the physician-defendant was poisonous or harmful and the trial court should have given the instruction requested by the defendant. The instruction that the court did give erroneously assumed the existence of certain facts and this, with the court's failure to instruct the jury as requested, was prejudicial error. The effect of it on the minds of the jury could not be ascertained and therefore the erroneous instruction was not cured by the diminution of the amount of the verdict. The Supreme Court, therefore, directed that a new trial be given.—*Fortner v Koch (Mich.) 261 N W 762*

Malpractice Statute of Limitations, Concealment of Cause of Action—The defendant, a physician operated on one of the plaintiffs Sept 2 1931. He employed Dr F F McMillan to administer the anesthetic. During the operation the patient lost a considerable amount of blood, and tight bandages were applied to her legs. Shortly after the operation the defendant left for another city without giving orders for the removal of the bandages. He was absent four days. Dr McMillan the anesthetist too left town, and he was absent until the next day after the operation. When and by whom the bandages were removed is not clear from the report of this case but they were not seasonably removed and the patient developed ulcerated areas on her legs with paralysis substantially complete from the knees down. After his return, Dr McMillan visited the patient a few times responding apparently to a call by the nurse. Later the defendant treated the patient for a time and finally sent her to a hospital.

For nearly a year the patient and her husband corresponded extensively with the defendant looking toward a settlement of their claim for the injuries attributed to his negligent treatment.

Finally, Aug 25, 1932, the defendant agreed to pay them \$3,500 and they agreed not to sue him, and a covenant was entered into between them to that effect. The patient and her husband did, however, sue Dr McMillan. In the first trial a disagreement of the jury resulted and in the second trial the jury returned a verdict in Dr McMillan's favor.

The patient and her husband then instituted action to have the court set aside the covenant into which they had entered with the defendant in this case, by which in consideration of the payment by him of \$3,500, they had agreed to refrain from suing him. They contended that the defendant had practiced fraud on them in obtaining that covenant. He had, they alleged, told them that he had expected Dr McMillan to care for the plaintiff on whom he had operated after the operation, that he had made specific arrangements to that effect, that such was the local custom, and that he would so testify if they covenanted not to sue him. The defendant had, however, they alleged, at the first trial of their suit against Dr McMillan denied that he had made a specific agreement with him to give postoperative care to the patient. The trial court entered a decree setting aside the covenant and declaring that it was not a bar to proceedings by the patient and her husband against the defendant for negligent malpractice. The defendant thereupon appealed to the Supreme Court of Michigan.

In Michigan actions for malpractice must be instituted within two years from the time the cause of action accrues, but if a physician fraudulently conceals the cause of action, action may be commenced at any time within two years after the person who is entitled to institute action discovers that he has that right. The physician defendant contended apparently, that even if the covenant not to sue should be set aside as the trial court had undertaken to do, the statute of limitations had run against the plaintiff's claim for damages arising out of alleged malpractice incident to the operation in 1931. If the plaintiffs said the Supreme Court, knew that they had a cause of action against the defendant the time within which they could institute suit had elapsed. The plaintiffs agreed not to sue the defendant and entered into a covenant to that effect after long negotiations, consultations with counsel and threats of a suit. It would be incongruous said the court, to permit a person to plead that the running of the statute of limitations had been stopped by the fraudulent concealment from him of the very same cause of action for which he had accepted a substantial sum in settlement.

The Supreme Court set aside the decree of the trial court declaring the covenant void and reversed the action of that court.—*Hast v Duffie (Mich.) 262 N W 401*

Society Proceedings

COMING MEETINGS

- American Association of Anatomists Durham N C Apr 9 11 Dr George W Corner 260 Crittenden Boulevard Rochester N Y Secretary
- American Association of Pathologists and Bacteriologists Boston Apr 9 10 Dr Howard T Karsner 2085 Adelbert Road Cleveland Secretary
- American College of Physicians Detroit Mar 26 Mr E R Loveland 133 South 36th Street Philadelphia Executive Secretary
- American Physiological Society Washington D C Mar 25 28 Dr A C Ivy 303 East Chicago Avenue Chicago Secretary
- American Society for Experimental Pathology Washington D C Mar 25 28 Dr Shields Warren 195 Pilgrim Road Boston Secretary
- American Society for Pharmacology and Experimental Therapeutics Washington D C Mar 25 28 Dr E M K Geiling 710 North Washington Street Baltimore Secretary
- American Society of Biological Chemistry Washington D C Mar 25 28 Dr H A Matill Chemistry Bldg State University of Iowa Iowa City Secretary
- Federation of American Societies for Experimental Biology Washington D C Mar 25 28 Dr E M K Geiling 710 North Washington Street Baltimore Secretary
- Missouri State Medical Association Columbia Apr 13 15 Dr E J Goodwin 634 North Grand Blvd St Louis Secretary
- Nebraska State Medical Association Lincoln Apr 7 9 Dr R B Adams 15 N Street Lincoln Secretary
- Oklahoma State Medical Association Enid Apr 6 8 Dr L S Willour 203 Ainsworth Building McAlester Secretary
- Pacific Coast Surgical Association Del Monte Calif Feb 20 22 Dr Edgar L Gilcreest 384 Post Street San Francisco Secretary
- Southeastern Surgical Congress New Orleans March 9 11 Dr Benjamin T Brasley 478 Peachtree Street N E Atlanta Ga Secretary
- Tennessee State Medical Association Memphis Apr 14 16 Dr H H Shoulders 706 Church Street Nashville Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

191:1152 (Jan.) 1936

Malignant Lymphoma of Tonsil. H. Jackson Jr., T. Parker Jr. and A. M. Brues. Boston—p. 1.

*I. Iron and Its Utilization in Experimental Anemia. G. H. Whipple and F. S. Robscheit Robbins. Rochester, N. Y.—p. 11.

*II. Iron Metabolism: Its Absorption, Storage and Utilization in Experimental Anemia. P. F. Hahn and G. H. Whipple. Rochester, N. Y.—p. 24.

*The After-History of Lipoid Nephrosis. R. H. Major. Kansas City, Kan.—p. 43.

Hyperparathyroidism with Renal Insufficiency. Report of Case. K. A. Elsom, F. C. Wood and I. S. Ravdin. Philadelphia—p. 49.

Treatment of Gonorrheal Arthritis by Means of Systemic and Additional Focal Heating. W. Bierman and C. Levenson. New York—p. 55.

Total Blood Fat Determination as an Index of Thyroid Function. C. T. Chamberlain, S. Jacobs and Mary Frances Butler. New Orleans—p. 66.

Effect of Therapy on Nerve Degeneration in Pernicious Anemia. E. S. Mills. Montreal—p. 72.

The Heart in Myxedema. Correlation of Physical and Postmortem Findings. W. H. Higgins. Richmond, Va.—p. 80.

Prognosis of Bundle Branch Block and Other Intraventricular Conduction System Lesions. J. J. Sampson and O. E. Nagle. San Francisco—p. 88.

Electrocardiographic Study of Lead IV with Special Reference to Findings in Angina Pectoris. H. D. Levine and S. A. Levine. Boston—p. 98.

Mitral Valve Disease. Pathologic Report. H. W. Dana and J. A. Reidy. Boston—p. 109.

*Effect of Calcium Injections on the Human Heart. K. Berliner. New York—p. 117.

Use of Iron in Experimental Anemia—The thesis of Whipple and Robscheit Robbins relative to iron utilization in the standardized anemic dog is as follows: Iron given intravenously to a normal anemic dog will be utilized to form new hemoglobin practically on a quantitative basis. 10 mg of iron equals 3 Gm of hemoglobin. Therefore in the same dog under certain conditions the amount of absorbed iron may be estimated from the amount of new-formed hemoglobin. In the emergency due to anemia the healthy dog will utilize quantitatively the iron as it comes into the circulation just as under similar circumstances it utilizes quantitatively hemoglobin given intravenously to rebuild new hemoglobin for red cells. Assuming that under these conditions new-formed hemoglobin is a reasonably accurate measure of iron absorbed from the intestine, the ratio of iron ingestion may be calculated to new hemoglobin production. For the optimal dose of iron (40 mg daily) this ratio will be about 3:1 or a 35 per cent utilization of ingested iron. For larger doses of iron (400 mg daily) this ratio will be about 20:1 or a 5.3 per cent utilization of the iron given by mouth. This is to be compared with the 10:1 ratio for the feeding of whole blood cells by mouth for 10 Gm of hemoglobin fed there is a return of only 1 Gm of new hemoglobin in the standard dog. The figures of standard salmon bread feeding show that the salmon bread iron gives a 40 per cent utilization of this iron. On the average liver feedings show that the dog utilizes about 44 per cent of the iron contained in normal pig liver in the production of the new-formed hemoglobin. There are many organic and inorganic factors as well as iron that influence hemoglobin production in anemia and any dogmatic generalizations about food iron are not safe. Infection and intoxication will modify internal metabolism and limit the output of hemoglobin in anemia. Bile secretion will also modify the production of hemoglobin in this type of anemia. Eck fistula and splenectomy may modify reactions to iron given intravenously. When iron is given intravenously a quantitative return is observed even when enormous doses are given and the body finds the needed building material to supply the globin—a protein making up about 95 per cent

of the hemoglobin molecule. When an anemic dog is fasted and given iron intravenously, he will form large amounts of hemoglobin, and much of it must come from body protein stores. A considerable part of this new hemoglobin is formed by conservation of material which under control fasting conditions would be wasted as urea in the urine. Amino acids or organ fractions almost free of iron will cause increased hemoglobin production in the anemic dog. Now the dog must draw iron from depleted stores or utilize the food iron even more completely. The authors found it possible to reach the end of the iron stored in the body and observe a fall in hemoglobin production under such conditions but the iron conservation within the body must be truly remarkable.

Iron Metabolism—Hahn and Whipple observed that reserve iron storage in the dog can be exhausted during a period of from two to three months by a continuous anemia with the hemoglobin level maintained at from one half to one third of normal. A rapid turnover of iron is the conspicuous feature of the experiments dealing with iron given by mouth, and short feeding experiments (one to two days) give no evidence of any iron store in the liver. As the iron feeding experiments are lengthened a variable accumulation of iron in the liver is seen but the amounts are small and a very rapid appearance of the iron in matured hemoglobin is the conspicuous feature. Parenchyma iron of various blood free organs is relatively a constant in the standardized dogs. Liver, kidney and pancreas average from 1 to 2 mg of iron per hundred grams of fresh tissue; the lung 3 mg, the spleen from 5 to 6 mg, the red marrow probably in excess of 10 mg and the striated muscles 31 mg, of which about 16 mg is muscle hemoglobin iron, leaving the parenchyma iron as 15 mg. Muscle hemoglobin iron and muscle parenchyma iron are inviolate stores of iron which are not drawn on no matter how great is the emergency due to anemia. Conversely no surplus iron can be demonstrated in this tissue when iron is given intravenously. Iron depletion can be carried to a point at which there is almost a complete cessation of hemoglobin production in a standard dog on a diet poor in iron. Intravenous iron in the doses given will result in large storage in the liver and spleen from 55 to 70 per cent of the total iron given. The authors are not prepared to say where the remaining iron is to be located in the body tissues or fluids, but it certainly is not eliminated.

The After-History of Lipoid Nephrosis—Major discusses the after-history of lipoid nephrosis in six patients, one of whom has been followed for eight years, two for four years and one for three years. Two of the patients died showing marked acute glomerular nephritis with evidence of chronic glomerular changes at necropsy. Of the four patients living three are clinically well and one appears in good health and still shows a definite but not constant albuminuria. The three patients who have apparently recovered have been under observation eight years, four and one half years and four years. The patient who has recovered except for the slight albuminuria has been under observation three years. At one time or other practically every method of treatment recommended has been employed including high protein diets, blood transfusions, intravenous dextrose, thyroid extract, parathyroid extract and various diuretics including merbaphen and salyrgan. The authors have given their patients from 70 to 100 Gm of protein daily. Very high protein diets in their experience present a difficult problem. Studies of the nitrogen balance in two patients also indicated that an excess of protein intake was not stored but excreted as urinary nitrogen. Blood transfusions and intravenous injections of solution of dextrose were apparently of temporary value at least. They have not found thyroid extract or parathyroid extract of any definite value. Bacterial antigens were of questionable value. They have seen no detrimental effects from the use of merbaphen or salyrgan. At times they produce abundant diuresis and at other times no apparent effect. One patient was given intravenous acacia and a few days later developed an acute nephritis with death. This may have been a coincidence. The last three patients have been placed on a high carbohydrate diet of from 600 to 800 Gm daily occasionally as high as 1000 Gm. They have improved remarkably either as a result of the diet or because of the healing powers of nature.

Effect of Calcium Injections on the Heart—Berliner found that the intravenous injection of 10 cc of a 20 per cent solution of calcium gluconate produced changes in the electrocardiograms of twenty-six normal individuals. These changes consisted of flattening or inversion of the T waves in 92 per cent of the cases, flattening or inversion of the P waves in 44 per cent and a marked bradycardia in 67 per cent. Intravenous injection of 10 cc of physiologic solution of sodium chloride given to eighteen normal individuals had no effect on the electrocardiograms. This investigation, for the first time, supplies experimental proof of the effect of calcium on the normal human heart.

Am J Roentgenol & Rad Therapy, Springfield, Ill

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 *Lower Lung Line E Korol Lincoln Neb—p 740
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 *Preoperative Radium Treatment of Rectal Carcinoma H H Bowing and R E Fricke Rochester Minn—p 766
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 Factors Influencing Quantitative Measurement of Roentgen Ray Absorption of Tooth Slabs IV Absorption Coefficient Factors H C Hodge W F Bale S L Warren and G Van Hysen Rochester N Y—p 817

Lower Lung Line—Korol points out that in roentgenograms of the upper part of the abdomen there may be seen a horizontal line running from the lateral chest wall toward the first lumbar vertebra on each side. This line (the lower lung line) represents the lower posterior pleural boundary, i.e., the fold of parietal pleura reflected from the posterior chest wall onto the diaphragm. This line may be followed into its junction with the line representing the posterior mediastinal pleural fold. Occasionally the lower anterior pleural fold may also appear as a horizontal line at a slightly higher level than the posterior lung line. The anterior line has been seen only in cases of emphysema; it can be traced on the roentgenogram into the pericardiopleural fold. In cases of emphysema and visceroptosis, also in cases of pneumothorax, the lower lung lines often appear in the chest roentgenograms as horizontal lines crossing the twelfth rib a short distance below the dome of the diaphragm, which is flattened and placed low in these cases. In cases of atelectasis or fibrosis of one lobe with compensatory emphysema of the healthy lobes, the lower lung line often shows on the routine chest roentgenogram, owing to ballooning of the pleural fold by the emphysematous lung.

Preoperative Radium Treatment of Rectal Carcinoma

—At present Bowing and Fricke employ an aggressive preoperative treatment for rectal carcinoma. Platinum-filtered needles (1 mg) are evenly placed throughout small growths for forty-eight hours, or gold radon seeds are implanted. Contact treatment has also been employed: two or three radon tubes (with 1 mm of brass 0.5 mm of silver and 1 mm of rubber as filters) are strapped side by side with adhesive tape to form a plaque. The tubes are placed through the proctoscope against the growth after the normal wall of the intestine has been packed away with gauze soaked in metaphen; a dose of from 60 to 100 mg hours per square centimeter of malignant tissue is employed. This treatment is repeated daily to different areas of the growth until the entire lesion has been covered. Surgical diathermy is used to reduce the bulk of the medullary tumors and to facilitate the puncture method of radium therapy. From 1930 to 1933 inclusive, fifty-eight

patients were selected for this form of treatment. The full plan of treatment (that is, radical excision following radium therapy after an interval) was carried out in only thirty-seven cases. Thirty-one of the patients are living at the present time, although two are seriously ill and two others may have residual trouble. The remaining twenty-seven patients appear to be well and free from recurrence. In five of these, complete healing of the posterior wound has not yet occurred. Six patients have been perfectly well for more than four years. Careful microscopic examination of removed tissue was carried out in all cases following surgical excision of the growth. In three cases no evidence of carcinoma was found in the surgical specimen, radium treatment apparently having destroyed all vestiges of the growth. In three other cases the pathologist found that most of the malignant cells had been eradicated by radium.

Roentgen Therapy of Thrombo-Angitis Obliterans—

Pfahler uses 200 kilovolts and 0.5 mm of copper filtration in the radiation treatment of thrombo-angitis obliterans. Since the sympathetic ganglions are approximately from 10 to 12 cm from the surface of the skin, it seems more logical to use a higher voltage and higher filtration technique. The surface dose will vary therefore with the quality of rays used. He advises from 20 to 30 per cent (150 to 200 roentgens) of an erythema dose at each session. The distance has been usually from 40 to 50 cm. The area usually treated has involved the paravertebral region from the eleventh dorsal to the fifth lumbar vertebra. In some cases this has been divided into four portals and the treatment through each area is given on separate days or through two areas on each of two days. The larger the area used, the more likely is radiation sickness to occur. From a review of the cases treated, it would seem advisable to treat the patient over the sympathetic ganglions indicated by the location of the disease probably three times a week until a total of one-half to a full erythema dose has been given over each portal or over the whole area. Such a series may be repeated after an interval of one or two months if necessary. Pain is relieved usually in about two to three weeks after the inception of the treatment, and at times it occurs more promptly. One of the author's patients could walk only a city block, when he would have to stop because of pains in the calf of the legs. He has been completely relieved and three years later can play thirty-six holes of golf at the age of 67. Usually patients have returned to their work in from five to six weeks. The relief of special symptoms has been somewhat as follows: Intermittent claudication disappears sufficiently within two weeks for the patient to walk without distress, and in 50 per cent of the cases reported by Philips and Tunick these symptoms disappeared completely within six weeks. Circulatory and trophic disturbances improve in from four to six weeks. Ulcerations show a tendency to improve within a few weeks and disappear within a few months. Granulations appear and epithelization of the margins is noticed early and an appearance of an ordinary ulcer is soon established. A tendency for gangrene to become dry was noticed early and gradually the dead tissue separated and the area healed. Marked general improvement appears rapidly, chiefly owing to the relief of pain.

Anatomical Record, Philadelphia

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- Vasomotor Phenomena Allied to Raynaud's Syndrome M M Peet and E A Kahn Ann Arbor Mich—p 79
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Subtemporal and Suboccipital Myoplastic Craniotomy

—Cone and Penfield outline a simple technic, myoplastic subtemporal craniotomy, which permits rapid exploration through a wide unobstructed opening and provides a firm, safe restoration. A curved incision is made in the scalp without wounding the pericranium. This incision skirts the superior temporal line to which the fascia of the temporal muscle is attached. Posteriorly the incision is swung slightly forward on the supramastoid crest. The superior temporal line is identified anteriorly by palpation. As this incision is deepened, the pericranium is exposed just beyond the temporal muscle fascia. By palpation the extent of the temporal muscle fan can be outlined quickly by having the patient bite. The scalp flap is reflected from the periosteum until the temporal fascia attached to the superior temporal line of the parietal bone and the posterior part of the temporal ridge of the frontal bone is exposed. An incision is carried down to the calvarium through the line of fascial attachment and the muscle and scalp flap are reflected from the temporal bone and retracted with two or three guy sutures attached to rubber bands. The bone is removed from the temporal fossa up to within a centimeter or less below the fascial incision. An opening from 9 to 7 cm is thus readily obtained. To reattach the myoplastic flap, holes are made in the margins of the bone defect, usually from twelve to fourteen, and interrupted chromium steel wire sutures, size 33, are passed through the holes and up through the muscle and overlying fascia and are tied next to the bone. The fringe of fascia and pericranium left attached to the flap as it was reflected is sutured either with interrupted silk sutures or with a continuous locked silk suture, and the scalp is closed in two layers, as usual. In myoplastic suboccipital craniotomy used for bilateral or unilateral exploration of the posterior fossa the incision extends from the level of the tips of the mastoid processes to a point from 4 to 5 cm above the external occipital protuberance. The lateral wings of the incision are so placed that the muscles of the neck attached to the mastoid process will not be cut, the incision coming down through the occipitalis muscle directly to the periosteum of the mastoid bone. The incision in the scalp includes the galea but not the pericranium. The upper concave edge of the incision may be separated from the pericranium in an upward direction to allow the bur holes to be made for ventricular puncture. The scalp flap is reflected downward as far as the external occipital protuberance. The pericranium is then incised and while the flap is being retracted the suboccipital muscles are elevated from the bone down to the foramen magnum. The whole flap is held out of the way with guy sutures attached to rubber bands. Removal of the bone is carried down to the foramen magnum and upward so as to expose the transverse sinus as desired. Removal of the bone has been frequently carried high enough to permit ligation of the sinus section of the tentorium and elevation of the occipital lobe. At closure in order to reattach the reflected myoplastic flap from fourteen to sixteen holes are made in the margin of the bone defect about 1 cm apart. Babcock's rustless steel sutures are passed through the holes through the

muscle and its aponeurosis, and then tied next to the bone. The fringe of pericranium left attached to the flap is then sutured, and the scalp is closed in two layers as usual. Silk is used for the buried sutures. When drainage is instituted, rubber dam tubing of small size is carried out through a separate stab wound at some distance above the incision. The long tract makes it possible to stop drainage of cerebrospinal fluid at once by pressure when the drain is removed.

Injection into Gasserian Ganglion—Putnam and Hampton describe a modification of Hartel's method of injection into the gasserian ganglion in which the puncture is made during a brief period of anesthesia and the position of the needle is established by means of roentgenograms taken during the procedure. This has been carried out in eighteen cases of trigeminal neuralgia, four cases of carcinoma of the mouth and one case of postherpetic neuralgia, with relief in all but one case. Of three patients with migraine one was satisfactorily relieved, another was improved and a third was unaffected. The method appears to have certain advantages over operative section of the posterior root and also over the older methods of injection.

Archives of Surgery, Chicago

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- *Role of Ileocecal Sphincter in Cases of Obstruction of Large Bowel L Sperling Minneapolis—p 22
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Role of Ileocecal Sphincter—Sperling shows that the ileocecal sphincter is competent to withstand pressures of from 10 to 50 cm of water, which conceivably might occur in the course of obstruction of the large intestine. A competent ileocecal sphincter at once converts a simple type of obstruction into a closed loop with all the inherent dangers of strangulation due to increased intra-enteric pressure. Experimentally the effect of such sustained pressures is shown by the development of areas of hemorrhagic necrosis in the colon of dogs. Similar changes occur in the human colon. The term "ileocecal valve" is a misnomer, the organ is more rightly called the ileocecal sphincter. It is subject to definite nervous control, and its competence depends on the tonicity of the fibers of the sphincter. That the tone of the sphincter is increased by stimulation of the sympathetic nerves is confirmed by experiments. Also it is shown that stimulation of the distal part of the colon increased the resistance of the sphincter to back pressure to approximately three times that of the normal sphincter. It is conceivable that the resistance of the ileocecal sphincter to back pressure is greatly increased in cases of intrinsic pathologic conditions of the colon. Stimulation of the distal portion of the colon, acting through Auerbach's plexus, increases the tone of the ileocecal sphincter, making it more competent. Several important clinical observations present themselves with relation to a competent ileocecal sphincter in cases of obstruction of the large intestine. Vomiting is a late symptom in such cases. The competent ileocecal valve allows material to pass into the colon but none to be regurgitated into the small intestine and stomach. Pain, distention and obstipation may be present for several days before the onset of vomiting. Vomiting may then be due to reflexes set up by distention of the colon. In the cases cited, aspiration of the stomach resulted in the return of only a few cubic centimeters, in spite of the fact that these cases represented late stages of obstruction. Nasal suction as a method of decompression is of little value in the treatment of acute obstruction of the large intestine with considerable distention. A single roentgenogram of the abdomen of a patient with clinical intestinal obstruction should

differentiate between obstruction of the small intestine and that of the large intestine. Roentgenography is the only accurate method of determining the degree of distention and the segment of intestine involved. All acute obstructions of the large intestine exhibiting considerable distention should be treated as obstructions of the closed loop type with potential strangulation, by means of operative decompression (cecostomy). Simple mechanical obstruction of the small intestine has been treated successfully at the University Hospital by decompression by means of nasal suction (Wangenstein). Patients who present only partial or low grade obstruction of the colon can be prepared for operation by medical management, and further distention of the colon can be prevented by the use of siphonage by nasal suction.

March Foot with Changes in Bones—Maseritz discusses the subject of march foot, concluding that it is a complication of the "strained foot, characterized usually by a sudden onset of pain and swelling on the dorsal and, to some degree, on the plantar aspect of the middle part and forepart of the foot. Clinically there is a tenderness over the shafts of one or more metatarsal bones and commonly at the junction of the middle and distal thirds of the second and third metatarsal bones rarely over the first or fifth. A roentgenogram when taken immediately, frequently reveals no change but may present a fracture. Periostitis with or without fracture, is often encountered at an early date, but then, in all likelihood, the callus is of longer duration unless the early shadow as Runstrom mentioned, is that of a subperiosteal hemorrhage. Periosteal changes are more commonly seen after ten days and fractures some weeks later. The latter, though, do not always make their appearance. Also periosteal thickening on one or the other side of the shaft is often found associated with march foot. The etiology is still debatable. Periostitis and fracture are positive observations but can be considered only as the end results of march foot. A case is cited presenting the usual changes in addition to (1) fragmentation of the internal cuneiform bone, (2) fracture of the head of a metatarsal bone and (3) fracture of the base of a metatarsal bone. These changes emphasize the possibility that fragility of bone may play an important part in the fractures of march foot. These changes partly substantiate the etiologic theories of some observers and deny those of others, and one may conclude that more serious thought and consideration should be given to the possibility of calcium disturbances in the bone proper.

Canadian Public Health Journal, Toronto

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- Observations from an Epidemic of Acute Poliomyelitis in Sukkertoppen Greenland. K. Hroly. Randers, Denmark.—p. 575.
Essential Features of Health Program as Seen by Provincial Medical Officer of Health. M. R. Bow. Edmonton, Alta.—p. 583.
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History of Public Health in Saskatchewan. R. O. Davison. Regina, Sask.—p. 596.
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Journal of Bacteriology, Baltimore

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- Dissimilation of Glucose by Heterofermentative Lactic Acid Bacteria. M. E. Nelson and C. H. Werkman. Ames, Iowa.—p. 547.
Anaerobic Bacteria Capable of Fermenting Sulfite Waste Liquor. A. M. Partansky and B. S. Henry. Seattle.—p. 559.
*Characteristics of New Species of Genus *Listerella* Obtained from Human Sources. C. G. Burn. New Haven, Conn.—p. 573.
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Chemical Biologic Study of *Escherichia coli* and Three of Its Rough Variants. E. H. Rennebaum. Brooklyn.—p. 623.
Concerning the Habitat of *Streptococcus lactis*. Pauline Stark and J. M. Sherman. Ithaca, N. Y.—p. 639.
Rate of Growth of *Rhizobia*. G. M. Cameron and J. M. Sherman. Ithaca, N. Y.—p. 647.

New Species of Genus *Listerella* from Human Sources—Burn states that during 1933 and 1934 four persons died at the New Haven Hospital from an infection caused by an unusual organism in which sepsis, focal necrosis of the liver

and meningitis were the predominant features. The organism is described as a small non-spore forming gram positive bacillus that has a tendency to form short chains and small clumps in broth. A clear beta zone of hemolysis is produced in blood agar plates. Hemolysis of blood in meat infusion broth also occurs in twenty-four hours at 37 C. Cultural and morphologic characteristics indicate that this organism is probably a new species of the genus *Listerella*. Specific agglutinin and absorption tests show that the four strains of this new pathogen are identical. It is pathogenic for rabbits, guinea-pigs, mice, monkeys and man. Lesions produced by the organism consist primarily of a focal necrotizing process and exudation, which are most marked in the liver. Localization of the organism in the central nervous system of rabbits and monkeys results when it is inoculated into the venous blood system. Intravenous inoculations into guinea-pigs cause multiple myocardial abscesses instead of meningitis. Intracerebral inoculations of minute quantities of this organism directly into the subarachnoid space invariably produce an extensive suppurative meningitis in rabbits, guinea-pigs, mice and monkeys. Intraperitoneal inoculations into guinea-pigs cause localization of the organism in the central nervous system without evidence of myocardial involvement. This route of inoculation for rabbits and mice proves fatal in forty-eight hours if optimal dosages are employed. *Macacus rhesus* monkeys show a remarkable degree of resistance surviving the infection even after it has once become established within the central nervous system.

Journal of Biological Chemistry, Baltimore

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Specific Responses Elicitable from Subdivisions of Motor Cortex of Cerebrum of Cat J W Ward and S L Clark Nashville Tenn—p 49
Development and Morphology of Cerebellum in Opossum Part I Early Development O Larsell Portland Ore—p 65
Morphologic and Functional Development of Membranous Labyrinth in the Opossum O Larsell Portland Ore E McCrady Jr and A A Zimmermann Chicago—p 95
Intramedullary Course of Dorsal Root Fibers of Each of First Four Cervical Nerves K B Corbin and J C Hunsey San Francisco—p 119
Morphology of Neurons Migrated from Ganglion Nodosum of Vagus in Birds Margaret E Brown New York—p 127
Neurofibrillar Development of Cat Embryos Extent of Development in Telencephalon and Diencephalon up to Fifteen Millimeters W F Windle Chicago—p 139

Journal of Experimental Medicine, New York

63 1156 (Jan 1) 1936

- Studies on Toxin Production of Shiga Bacilli E Waaler Oslo Norway—p 1
Pathology of Pneumococcus Infection in Mice Following Intranasal Instillation G Rake New York—p 17
Infectious Fibroma of Rabbits III Serial Transmission of Virus Myxomatosis in Cotton-tail Rabbits and Cross Immunity Tests with Fibroma Virus R E Shope Princeton N J—p 33
Id IV Infection with Virus Myxomatosis of Rabbits Recovered from Fibroma R E Shope Princeton N J—p 43
Inhibition of Schwartzman Phenomenon T Ogata New York and Tokyo Japan—p 59
Immunologic and Chemical Investigations of Vaccine Virus III Response of Rabbits to Inactive Elementary Bodies of Vaccinia and to Virus Free Extracts of Vaccine Virus R F Parker and T M Rivers New York—p 69
Colony Morphology of Tubercle Bacilli V Influence of the Hydrogen Ion Concentration of Culture Medium on Colony Form K C Smith New York—p 95
Experiments on Active Immunization Against Experimental Poliomyelitis P K Olitsky and H R Cox New York—p 109
Relation of Leukosis to Sarcoma of Chickens II Mixed Osteochondrosarcoma and Lymphomatosis (Strain 12) J Furth New York—p 127
Id III Sarcomas of Strains 11 and 15 and Their Relation to Leukosis J Furth New York—p 145

Inhibition of Schwartzman Phenomenon—Ogata confines his discussion to a series of experiments concerning the inhibition of the Schwartzman phenomenon by means of active bacterial filtrates and he finds that the phenomenon can be inhibited if an additional intravenous injection of a potent bacterial filtrate is given within one hour prior to or following the skin preparatory injection. The inhibitory effect of the additional intravenous injection takes place within the limits of certain quantitative relationships. Thus if the skin is prepared with a large amount of filtrate, the inhibition is absent or incomplete. Similarly if a large amount of filtrate is used for the provocative injection there occurs no inhibition. The inhibition described is of a transitory nature. The additional intravenous injection given several hours before or after the skin preparation has no inhibitory effect. The inhibition can be obtained only with filtrates capable of eliciting the Schwartzman phenomenon. Bacterial filtrates of low reacting potency as well as nonbacterial substances produce no inhibition. The mechanism of the inhibition remains unknown. The inhibition of the Schwartzman phenomenon cannot be interpreted as an anaphylactic desensitization for the following reasons: 1 Inhibition takes place if the additional intravenous injection is given simultaneously or shortly before and after the preparatory injection. Obviously an anaphylactic desensitization cannot be expected to occur before sensitization is induced. 2 There is no specificity of inhibition. A great deal of experimental evidence in the literature supports the possibility that processes exemplified by the Schwartzman phenomenon take place in induced and spontaneous bacterial and virus infections. The factors responsible for the Schwartzman phenomenon and derived from infected foci may induce a state of reactivity in tissues and organs removed from the sites of initial infection. When the state of reactivity establishes itself, discharge of the same factors into the blood stream would then elicit severe hemor-

rhagic lesions in these reactive sites. The mechanism might then be responsible for pathologic lesions scattered throughout the body, and the inhibitory reaction described in this paper might prevent their occurrence.

Journal of Immunology, Baltimore

29 427-538 (Dec) 1935

- Blood Grouping of Rwaia Bedoun W M Shinklin Beirut Lebanon (Syria)—p 427
Standardization of Antidysenteric Serum (Shiga) by Polysaccharide Precipitating Test (Zozaya) K Kurauchi and S Nagata Duren Manchuria—p 435
Purification of Diphtheria Toxin and Antotoxin K Ando and T Komyama Dairen Manchuria—p 439
Antigenic Properties of Bacteria Combined with Antibodies I Olitzki Jerusalem Palestine—p 453
Reactions Between Lipoids and Antibodies I Iso Electric Point and Composition of Aggregates Obtained on Adding Beef Heart Lipoid to Syphilitic Serum H Eagle Philadelphia—p 467
Id II Iso Electric Point and Composition of Heterophile Lipoid Antibody Aggregates H Eagle Philadelphia—p 485
Concentration of Antistreptococcus Plasmas of Different Antitoxic Potencies P P Murdick and Jessie I Hendry Albany N Y—p 501
Toxicogenic Properties of Hemolytic Streptococci from Human Infections A Wadsworth and Julia M Coffey Albany N Y—p 505
Capacity of Boiled Erythrocytes to Remove Agglutinins Note W C Boyd and Elizabeth H Tavian Boston—p 511
Limited Observations on Antistreptolysin Titer in Relation to Latitude A F Coburn and Ruth H Pauli New York—p 515
Observations on Action of Human and Animal Blood on Meningococcus N Silverthorne and D T Fraser Toronto—p 523

Journal of Nervous and Mental Disease, New York

83 1124 (Jan) 1936

- Function of Cerebellum from Clinical Standpoint K Goldstein New York—p 1
Tumor and Osteolipoma of the Brain S I Sperling and B J Alpers Philadelphia—p 13
*Psychiatric Aspects of Myxedema A J F Akelatis Rochester N Y—p 22
Congenital Stenosis of Aorta Cerebral Complications B Emsilver New York—p 37
Study of Permeability of Hemato Encephalic Barrier of Chinese Patients by Walter's Bromide Test T H Suh Peiping China—p 43

Psychiatric Aspects of Myxedema—Akelatis declares that in every case of myxedema not complicated by a psychosis there is a specific mental condition characterized essentially by psychomotor retardation and fatigability. Since the patients appreciate their difficulties they are apt to be depressed and irritable. This is dependent on the degree of myxedema and the individual. Stuporous conditions may occur in myxedema as illustrated by one of his cases. There is no specific type of psychosis associated with myxedema. The most frequent type of disturbance is a dysergastic (delirious hallucinatory) reaction characterized by a clouding of consciousness which may progress to complete disorientation, vivid hallucinations that are not primarily complex determined, unsystematized delusions of persecution and excitability. Myxedema may precipitate a psychosis in an individual with latent psychotic tendencies. In such a case the type of psychosis may be determined by the prepsychotic personality as seen in another of the author's cases. Definite improvement occurs under treatment with thyroid, and the treatment should be individual in each case of myxedema. It is advisable to start with small doses of thyroid, because these patients are extremely sensitive to the extract.

Military Surgeon, Washington, D C

77 297-362 (Dec) 1935

- Oxygen Administration by Nasal Catheter Adaptability to Military Medical Requirements H B Porter—p 348
Folic Gorter and the Brain F J Voloun—p 350
The Black Widow Spider W H Allen—p 352

Missouri State Medical Assn Journal, St Louis

33 138 (Jan) 1936

- *Hyperpyrexia Produced by the Hot Bath in Treatment of Syphilis C C Denme M Polsky and A N Yemone Kansas City—p 1
Mongolism in a North American Indian A Bleyer St Louis—p 13
Reaction of Water on Staining of Blood Smears Discussion of Its Influence R B H Gradowich St Louis—p 14
Preliminary Stage of Labor B G Hamilton Kansas City—p 17
Encephalitis Virus Neutralization Test as an Aid in Differential Diagnosis C O Brown and J Ruskin St Louis—p 19

Hyperpyrexia in Treatment of Syphilis—Denme and his associates assert that efficient temperatures can be produced in syphilitic patients by the use of the hot bath. They believe

that in some way the defense mechanism of the body is raised and the virility of the organism lowered simultaneously by the use of hyperpyrexia. Experimental work seems to show that temperatures of 104 F and higher set the defense mechanism in motion. In the cases presented it was not necessary to keep the temperatures at this level for long periods (ten minutes). With the exception of early seronegative syphilis inadequately treated syphilis with recurrent manifestations and early malignant syphilis, heat should not be used in the early types of syphilis. Heat is best applied in the later forms of syphilis, no matter what the manifestations. The provocative Wassermann effect was produced in 20 per cent of the seronegative cases. By the application of heat alone it has been shown that syphilitic manifestations disappear temporarily, if subsequent treatment with heavy metals is employed, they disappear permanently. Heat is an efficient therapeutic agent in recurrent neurosyphilis when malaria has already been used; the manifestations in the somatic system disappear with promptness. The authors predict that heat as an adjunct to the treatment of latent syphilis will become an integral part of the adequate treatment of syphilis. Malaria still remains supreme as the treatment of neurosyphilis. Heat as a therapeutic agent is probably the equal of malaria when used in other than neurosyphilis. The work presented is experimental and is not presented with the idea that all the statements are absolutely proved. They have shown that any form of hyperpyrexia enhances subsequent treatment.

Nebraska State Medical Journal, Lincoln

21 140 (Jan.) 1936

- Diabetes Mellitus Statistical Analysis of One Hundred and Twenty Cases Treated at the Outpatient Department of the University of Nebraska M Margolin Omaha—p 1
Management of False Labor and Management of First Stage of Labor E M Hansen Omaha—p 6
Second Stage of Labor F P Murphy Omaha—p 8
Use of Forceps Difficulties and Dangers L A Swanson Hastings—p 11
Management of Third Stage of Labor H S Morgan Lincoln—p 14
Postpartum Care H E Harvey Lincoln—p 17
Splenectomy R H Whitham and H H Everett Lincoln—p 19
Building a Country Surgical Practice A V Wortman Curtis—p 22
Diagnosis and Treatment of Anemia I Classification of Anemia J C Sharpe Omaha—p 25

New England Journal of Medicine, Boston

213 1215 1274 (Dec 19) 1935

- Electrocardiographic Diagnosis of Acute Cardiac Infarction with Especial Reference to Value of Precordial Leads J M Faulkner, Boston—p 1215
Secondary Carcinomas of Large Bowel E L Young Jr Boston—p 1219
Reticulocyte Responses in the Pigeon Produced by Material Effective and Noneffective in Pernicious Anemia with Description of Histologically Different Reactions of Bone Marrow G L Muller Rutland Mass—p 1221
Spinal Anesthesia Agents Methods and Indications M Saklad Providence R I—p 1226
Comparison of Postoperative Complications Following General and Spinal Anesthesia B Rapoport Boston—p 1235
Progress in Neurology in 1934 J Loman Boston—p 1238

213 1275 1328 (Dec 26) 1935

- Stones in Common and Hepatic Bile Ducts F H Iahey and N Swinton Boston—p 1275
Prostigmme in Diagnosis of Myasthenia Gravis H R Viets and R S Schwab, Boston—p 1280
Recent Outbreak of Food Poisoning in Shoreham Vt R F DeWitt Plymouth N H—p 1283
*Practical Limitations of Vaccine and Serum Therapy A B Wadsworth Albany N Y—p 1285
Progress in Study of Cardiovascular Disease in 1934 S McGinn Boston—p 1293

Limitations of Vaccine and Serum Therapy—Wadsworth points out that vaccine therapy is of great use in the prevention of infection by developing an immunity before infection has taken place, whereas serum therapy is limited to the treatment of infection. Immunization with vaccines requires time for the active immunity to develop and thus varies greatly with the different vaccines. Nevertheless vaccines are useful under certain conditions and in certain types of infection, which may be defined as the prolonged infections of low grade in which the disease process is not developing an adequate immunity and requires the further stimulation that might be derived

from judicious treatment with a potent vaccine. Immunity to bacterial infection can be and is obtained by immunization with dead bacterial cells or their toxins, whereas it is extremely doubtful whether an effective immunity against the virus diseases can be obtained without the introduction of the living virus and the development of some form of disease process in the tissues. Dead bacterial material may induce an extremely high degree of immunity which subsides and becomes latent when immunization has stopped, just as it does after the recovery of a person from bacterial infection. After recovery from the virus diseases, a second infection is extremely rare. The immunity is lasting, practically permanent for the duration of life. Similarly after the administration of a living virus in a vaccine the immunity is likely to be lasting with extremely rare exceptions—as for example, in the case of smallpox that develops in a person who has been vaccinated. Serum therapy is passive immunization in contrast to active immunization—vaccine therapy. Progress in the development of serum therapy, as in preventive immunization, has been hampered by obsessions regarding the specificity of the different hemolytic streptococci with relation to a particular disease. The strains differ and within certain limitations, can be classified but the author's studies of 1,500 cultures from all sources has established the fact that the same strains are found in scarlet fever as in septic sore throat or erysipelas, and they occur in about the same percentages in each disease. There is as yet no definition of a hemolytic streptococcus specific to scarlet fever, septic sore throat erysipelas or any other streptococcal infection. Attempts are now being made to improve and broaden the therapeutic action of the serums. The difficulty has been that, in the attempt to broaden the valence, the potency has been sacrificed. Serum therapy in streptococcal infection is further complicated by the fact that there are certain differences in the action of antitoxic and antibacterial serums not as yet fully understood. Conflicting opinion regarding the practical value of antimeningococcus, antipneumococcus and anti streptococcus serums in the treatment of infection during the past twenty years is to be attributed to the variation in the potency of the serums that have been available for treatment.

New York State Journal of Medicine, New York

36 154 (Jan 1) 1936

- Genesis of Renal Calculi Pathologic Physiologic Considerations A Randall Philadelphia—p 1
Alternating Bilateral Spontaneous Pneumothorax Complicating Bilateral Artificial Pneumothorax Case Report C E Hamilton and E Rothstein Brooklyn—p 7
Diagnostic Significance of Gallop Rhythm C S Danzer Brooklyn—p 10
Treatment of Undescended Testes by Anterior Pituitary like Principle from Urine of Pregnancy A Goldman A Stern and J Lapin New York—p 15
Plastic Reconstruction of Nasal Deformities K Kahn New York—p 20
*Surgical Treatment of Corns W I Calland New York—p 27

Surgical Treatment of Corns—Galland states that the ordinary clavus is amenable to operative treatment. The operation must eliminate the factors that produce the recurrence of the clavus—the hyperkeratosis the bursa and the juxta-articular prominences. The operation is simple and devoid of any great risk of complications. He has performed it during the last four years without any complicating incident. No infections have been encountered and without exception these patients have been able to walk around with a fair degree of comfort within four days after operation. Several interns and nurses operated on for corns have continued their duties without interruption following this procedure.

Ohio State Medical Journal, Columbus

31 905 992 (Dec 1) 1935

- Progress in Tuberculosis Prevention Bacteriology Immunology Chemistry and Pathology C A Doan Columbus—p 921
Id Hematology B K Wiseman Columbus—p 925
Id Collapse Therapy G M Curtis with collaborators C H Benson and L E Barron Columbus—p 933
Clinical Aspects of Alkalosis J H Davis Cleveland—p 936
Conservatism in Gynecology V S Counsellor Rochester Minn—p 940
Systolic Murmur in Clinical Medicine and in Insurance Examination R W Scott Cleveland—p 943

Psychoanalytic Quarterly, Albany, N Y

4 537 688 (Oct) 1935

- Amenhotep IV (Ikhnaton) Psychoanalytic Contribution to Understanding of His Personality and Monotheistic Cult of Aton K Abraham —p 537
History of an Impostor in the Light of Psychoanalytic Knowledge K Abraham —p 570
The Problem of Psychoanalytic Technique F Alexander Chicago —p 588
Pecking in Chickens Note D M Levy New York —p 612
Unconscious Values in Certain Consistent Mispronunciations K A Menninger Topeka Kan —p 614
Inhibitions Symptoms and Anxiety S Freud —p 616
Ariel Abraham's Contribution to Applied Psychoanalysis H Sachs Boston —p 627

Public Health Reports, Washington, D C

50 1751 1778 (Dec 13) 1935

- Job Analysis of Rural Health Officer Brunswick Greenville Health Administration Studies Number Six J O Dean —p 1751
Cost of Local Enforcement of the United States Public Health Service Milk Ordinance A W Fuchs and L C Frank —p 1762

Surgery, Gynecology and Obstetrics, Chicago

62 1 128 (Jan) 1936

- Review Clinical and Pathologic of Parathyroid Lesions C H Frazier Philadelphia —p 1
Evacuation of Gallbladder in Old Age F A Boyden and S A Grantham Jr Minneapolis —p 34
Cholecystitis with Cholelithiasis Clinicopathologic Study of Sixty Patients B Halpert and K B Lawrence New Haven Conn —p 43
Life Expectancy in Biliary Intestinal Anastomosis E L Elverson and J Johnson Philadelphia —p 50
Pancreatic Fistula Case with Intubation of Wirsung's Duct W H Snyder Jr and R Ium Boston —p 57
Physiologic Changes in Ureter Associated with Pregnancy H F Traut and C M McLane New York —p 65
Reconstructions About Nasal Tip C L Struth Detroit —p 73
Malunited Fractures Affecting Ankle Joint with Especial Reference to Twenty Two Cases Treated by Arthrodesis A C Kimberley New York —p 79
Relation of Chronic Cervicitis to Infection of Urinary Tract R D Herrold E E Ewert and H Maryan Chicago —p 85
Carcinoma of Breast Survival for Twenty Four Years with Local Recurrences and Metastases in Opposite Breast and Axilla M C Tod and E K Dawson Edinburgh Scotland —p 91
Syphilis of Bladder E O Finestone New York —p 9
Rupture of Cystic Follicle and Corpus Luteum W T Hoyt and J V Meigs Boston —p 114

Changes in Ureter Associated with Pregnancy—Traut and McLane state that the normal ureter of the nonpregnant woman is possessed of rhythmic peristaltic activity which can be measured and recorded. This rhythmic peristaltic activity was definitely altered by pregnancy in varying degrees in the majority of the thirty four patients studied. This altered peristaltic activity is expressed by diminished amplitude of the peristaltic wave commencing in the third month of pregnancy but reaching its peak during the seventh and eighth months. After the fifth month the number of patients showing diminished ureteral response exceeds those showing normal activity. During the last month of pregnancy there seems to be a definite return of muscular irritability as expressed by the measurement of peristalsis and response to stimulation. This diminished peristaltic activity of the ureters seen in pregnancy cannot be explained on a basis of dilatation. On the contrary dilatation of the ureters during pregnancy is probably in great part dependent on the atony of the ureters. The etiology of this observed ureteral atony during pregnancy is in the authors' opinion not dependent on any mechanical factor but rather on some as yet unexplained chemical basis.

Chronic Cervicitis and Infection of Urinary Tract—Herrold and his associates mention that coagulation of the cervix for chronic cervicitis gave satisfactory relief of symptoms referable to the urinary tract in approximately two thirds of their thirty two patients. As yet their investigation has not proved the exact mechanics of such improvement. They favor the view that constant reinfection of the urethra and bladder particularly with enterococci, is an important contributing factor. In many instances clinical improvement has been coincident with a decrease of the bacterial flora of the urinary tract. On the other hand some patients with improvement have continued to yield enterococci from cultures of the urinary sediment. It is possible that such remaining infection is more superficial

than before cervical coagulation and would disappear spontaneously or by treatment after a longer period had elapsed. One arthritic patient was relieved of all symptoms within four weeks after coagulation of the cervix. There were two patients who had symptoms similar to a group that is frequently described as idiopathic fever. A diagnosis of tuberculosis had been made in these patients and one had been sent to a sanatorium in New Mexico, where it was decided after several weeks of observation that she was not tuberculous. After coagulation of the cervix the patient's temperature returned to normal and the urine cultures no longer yielded streptococci. The other patient continued to have fever after coagulation but streptococci persisted in the urine cultures and it is possible that the infected gland bearing tissue was not all destroyed. In instances of this sort the Sturmdorf operation would seem to be preferable. One patient who had an early interstitial cystitis received definite improvement following coagulation of the cervix.

West Virginia Medical Journal, Charleston

32 1 52 (Jan) 1936

- Benign Breast Lesions with Especial Consideration of Borderline Tumors Cancer of Breast and Newer Conception of Preoperative Irradiation L C Cohn Baltimore —p 1
*Production of Pathologic Changes in Nervous System by Diabetes Mellitus W M Sheppe Wheeling —p 9
Peptic Ulcer T R Brown Baltimore —p 17
Diagnosis and Treatment of Osteomyelitis J O Rankin Wheeling —p 26
The Lure of Legendary Medicine Mrs B S Preston Charleston —p 32

Changes in Nervous System in Diabetes Mellitus—Sheppe believes that it is safe to say that advanced degrees of diabetic neuropathy are represented by degeneration of fibers in the dorsal and lateral columns and anterior horns of the spinal cord marked degeneration of the nerve roots and extensive demyelination of the peripheral nerve fibers. The changes frequently produced in the nervous system by the action, direct or indirect, of diabetes mellitus bring on a wide variety of neurologic manifestations involving the higher functions of the cerebrum and the cranial nerves, either singly or in various combinations. In addition to these miscellaneous manifestations, the author has cited five cases with one necropsy to illustrate the syndrome which is produced by diabetes and which markedly duplicates in every way the manifestations of tabes dorsalis. This syndrome is characterized by progressive weakness and paralysis of the lower extremities and either partial or complete paralysis of the bladder. Before making such a diagnosis it is necessary of course to establish the presence of diabetes and to eliminate other diseases that might produce similar effects on the spinal cord (syphilis, pernicious anemia, cord tumor arthritis of the spine and trauma). Diagnosticians should bear in mind the probability of the production of lesions of the central nervous system by a manifest or latent diabetes. The histologic studies and the clinical manifestations of the author's case showed that the changes encompassed by the term 'diabetic neuropathy' are not confined to the peripheral nerves but occur in various portions of the cord as well. These changes consist principally of degeneration of fibers of the cord and nerve roots, followed by moderate gliosis of the cord and marked demyelination in the peripheral nerves.

Wisconsin Medical Journal, Madison

34 877 1016 (Dec) 1935

- Tuberculosis and the Family Doctor H E Dearholt Milwaukee —p 891
Acne Vulgaris Discussion of Some Aspects S M Markson and H I Miller Milwaukee —p 895
Selection of Material for Toxicologic Examination I L Kozelka Madison —p 898
Treatment of Bromide Intoxication O E Toenhart Madison —p 901
Surgical Infection of Kidney W J Carson Milwaukee —p 903
Ludwig's Angina (Suprahyoid Phlegmon) R P Gungress Milwaukee —p 905
The Importance of Prenatal Care Amy Louise Hunter Madison —p 908
Recent Methods in Prevention of Disease Critical Review A B Schwartz Milwaukee —p 911
The Diabetic as a Surgical Risk E M Jordan Green Bay —p 918
Carcinoma of Testicle Postoperative Sequels Treatment and Comments F H Kuegle Janesville —p 920

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

2 1031 1082 (Nov 30) 1935

- Thyrototoxicosis Its Medical Aspects Horder —p 1031
 Id Its Surgical Aspects T Dunhill —p 1034
 Congenital Pyloric Stenosis with Observations Based on Two Hundred and Nine Consecutive Cases W A Thompson and W F Gaisford —p 1037
 *Quantitative Estimation of Vitamins A and D in Various Food Substances Cooked and Fresh Katharine H Coward and Barbara G E Morgan —p 1041
 Immediate Operation in Acute Appendicitis Further Note on Sixty Six Consecutive Cases H C W Nuttall —p 1045

Vitamins A and D in Cooked and Fresh Foods—Coward and Morgan estimated the vitamin A potencies of milk, butter, egg yolk and various vegetables quantitatively in terms of the international unit by comparison with one sample of cod liver oil of known potency, a test on the oil being made simultaneously with the test on each food substance. The boiling of the vegetables in a manner similar to that used in ordinary cooking did not destroy any vitamin A. Boiled carrots, cabbage and runner beans have been shown to be valuable sources of vitamin A, in view of the amount that can readily be eaten. Their potencies are about one third, one seventh and one tenth respectively of an average sample of summer butter, which contains 60 units per gram. Tables are given showing the vitamin A and D potencies of various foods expressed as the number of international units per gram of food and also as the number of units in a 'portion' of the food usually eaten.

Journal of Tropical Medicine and Hygiene, London

38 301 312 (Dec 16) 1935

- Initial Impressions of Atabrine Plasmochin in Treatment of Malaria in Uganda A F Brown —p 301
 Control of Bilharzia Infection in Swaziland T G Cawston —p 305
 Bacillus Pseudotuberculosis Anthracoides W L Forsyth and A A Salam —p 306

Lancet, London

2 1217 1274 (Nov 30) 1935

- Traumatic Epilepsy C P Symonds —p 1217
 *Treatment of Hematemesis and Melena with Food Mouthity J Meulengracht —p 1220
 Radiologic Aspects of Anomalies of Intestinal Rotation F I Rubin —p 1222
 Induction of Cancer by Cracked Mineral Oils C C Fawcett and J M Twort —p 1226
 The U Wave of the Electrocardiogram E Hinden —p 1228
 Arterial Embolectomy in Case of Proximal Embolism A Riddell —p 1250
 Arterial Embolism G R Girdlestone —p 1231
 Atropine Poisoning Case V M Mettler —p 1232
 Foreign Body in Male Bladder J Cook —p 1232

Treatment of Hematemesis and Melena with Food—Meulengracht treated 251 cases of hematemesis and melena arising from ulcer of the stomach and duodenum by giving the patients varied food from the very first day, and plenty of it. From the day after their admission to the hospital all the patients are given a full puree diet, together with a mixture consisting of 15 Gm of sodium bicarbonate, 15 Gm of magnesium subcarbonate 2 grains (0.13 Gm) of extract of hyoscyamine (one teaspoonful three times daily), and one-half gram (0.032 Gm) of iron lactate three times a day. The puree diet includes the following meals: tea, white bread and butter at 6 a.m., oatmeal with milk, white bread and butter at 9 a.m., dinner at 1 p.m., cocoa at 3 p.m., and white bread and butter, sliced meats, cheese and tea at 6 p.m. The dinner includes a variety of dishes, e.g., meat balls, timbale, broiled chops, omelette, fish balls, vegetable gratin, meat gratin, fish gratin, mashed potatoes, vegetable purees, vegetable soups, cream of vegetables, stewed apricots, apple sauce, gruel, and rice and tapioca puddings. The patients are allowed to have as much as they want. In a few cases (twelve) in which large quantities of blood have been lost they have been given one or two blood transfusions soon after admission. Among these 251 patients there were three deaths after the hemorrhage. The

first patient did not die of hemorrhage but of perforation with diffuse peritonitis. The second patient died seventeen days after the commencement of the treatment from profuse hemorrhage from an eroded artery. The third died shortly after admission without having got as far as the "treatment with food." The author believes that this radical change in mortality brought about by treatment with food is due to something beyond its effect on the hemorrhage itself. In his experience patients with hematemesis and melena do not usually die until some time—on an average eight days—after the hemorrhage begins. Thus in his opinion they do not die directly from loss of blood but rather from general exhaustion, often with complications. This exhaustion is no doubt primarily the result of their anemic condition, but it is accentuated by extreme insufficiency in food and drink with which they are ordinarily supplied at this critical moment. With treatment with food, instead of weakening the patient still more he is given support when he needs it badly. From the present knowledge of vitamins and the principles of nutrition it seems justifiable to assume that the healing processes are not favored by an insufficient diet.

Practitioner, London

135 725 844 (Dec) 1935

- Diseases of Thyroid H Rolleston —p 725
 Medical Treatment of Toxic Goiter F R Fraser —p 729
 Surgical Treatment of Toxic Goiter G Keynes —p 743
 Myxedema O L V de Wesselow —p 757
 *Diseases of Thyroid Gland in Children E A Cockayne —p 767
 Basal Metabolic Rate Its Meaning and Interpretations J D Robertson —p 780
 The Neurologic Training of the Medical Student L Bramwell —p 792
 Some Minor Digestive Errors J Geoghegan —p 800
 Some Observations on Artificial Pneumothorax B Hudson —p 813
 *Diphtheria Immunization Some Immediate and Vital Issues G Bousfield —p 821
 Favorite Prescriptions VII The Pharmacopoeia of Charing Cross Hospital F C Warner —p 827

Diseases of Thyroid in Children—Cockayne discusses the clinical features, differential diagnosis and treatment of sporadic cretinism, epidemic cretinism, hypothyroidism, juvenile myxedema, thyrototoxicosis, simple goiter and goiter of puberty. The most important diseases of the thyroid in children are those in which its secretion is absent, deficient or excessive. Simple goiter in some families that the author has seen is inherited as a mendelian dominant. Like most hereditary conditions it may affect a single member of a family, making the diagnosis less obvious. Apart from a general enlargement of the gland there are no signs or symptoms of hypothyroidism or of thyrototoxicosis and no ill effects are felt in later life. He believes that no treatment is required. Goiter of puberty is not uncommon especially in girls, and though it is symptomless, it indicates that the thyroid is unable to maintain an adequate secretion without hypertrophy. Small doses of potassium iodide or tincture of iodine are advisable, and iodine ointment may be rubbed into the skin over the gland. As puberty becomes established the enlargement of the thyroid often disappears, but careful watch should be kept for any signs or symptoms of thyrototoxicosis, and, if they appear, suitable treatment should be begun without delay.

Diphtheria Immunization—Bousfield believes that a decision on the following questions regarding diphtheria immunization is of national importance. 1 What antigens are of sufficiently proved value and general suitability for them to be employed by public health authorities and recommended to the profession for use in general practice? 2 What procedure, or alternative procedures should be advocated as routine for the country as a whole? 3 What is to be the agreed announcement to the populace as the legitimate claim for immunization conducted on the lines of the answers to questions 1 and 2? The whole matter is at present handled far too loosely, and these points should not be decided by individual local authorities. Two families, residing in neighboring streets are at present liable to acquire quite different ideas as to the value of immunization when they happen to live in adjoining areas with different health officers. The merits of immunization are sufficient for them to be announced from the house-tops without making any exaggerated or misleading claims.

Archives des Maladies du Cœur, Paris

28 701 772 (Nov.) 1935

- Deinsulmated Pancreatic Extract After Five Years Experience P Gley and N Kisthinos—p 701
- *Differential Diagnosis of Pulmonary and Coronary Thrombosis A van Bogaert and H J Scherer—p 714
- S Wave of Electrocardiogram I Pines—p 727

Pulmonary Embolism and Coronary Thrombosis—Van Bogaert and Scherer discuss the difficulties sometimes encountered in differentiating between pulmonary embolism and coronary thrombosis. They cite a case in which, three days after an operation for suppurative arthritis of the left knee, a sudden, unexpected cardiovascular collapse occurred. The age (62 years), the gallop rhythm, the electrocardiographic changes and the vascular collapse caused diagnostic difficulty. Death occurred nine days after the accident as a result of terminal dyspnea. Necropsy showed an obstructive embolus of the trunk of the pulmonary artery, which was the immediate cause of death. There was also a mesenteritis of the pulmonary artery and its principal branches. There was a femoral and left hypogastric phlebitis with ectasia of the vesicular veins. No changes existed in the coronaries myocardium or pericardium, but there was considerable dilatation of the right side of the heart. There were numerous small infarcts in the kidneys. The major question raised is by what mechanism obliteration of the pulmonary artery produces the symptoms of coronary thrombosis. It is impossible to answer this question finally. It seems, however, that pulmonary embolism produces a drop in intra aortic pressure and therefore a distention of the right side of the heart, which compresses the coronary vessels. Thus the same mechanism is called into play which in the case of pulmonary embolism is merely more complicated in origin than in coronary occlusion by thrombosis.

Presse Medicale, Paris

43 1913 1936 (Nov 27) 1935

- Reaction Therapy of Recurrent Urticaria by Histamine Ionization N Fiessinger and A Gaydos—p 1913
- Tolerance of Bone to Metallic Foreign Bodies F Masmonteil—p 1915
- *New Clinical Form of Nicolas Favre Disease A Aravantinos—p 1918
- Basal Fractures and Propidon M Lecercle—p 1918

Nicolas-Favre Disease—Aravantinos calls attention to a form of lymphogranulomatosis that is localized in the anorectal region and is acute. Its clinical manifestation is a dysentery. The patient first notices an increased frequency and loss of consistency of the stools. Soon painful tenesmus and loss of weight occur. Rectoscopic examination reveals an injected and ulcerated anorectal mucosa. Except for the tenesmus, the condition is less acute than bacillary dysentery. It is easy to understand that if not correctly diagnosed, the condition becomes chronic and results eventually in anorectal stenosis. The author believes that it is more frequent than generally believed and is probably caused by pederasty, since it is especially common in Greece among sailors.

Riforma Medica, Naples

51 1859 1896 (Dec 7) 1935

- Synthesis of Biotypologic Theory Laws of Life in Determination of Individual Biotype N Pende—p 1859
- *Abnormality of Knee Not Yet Described Accessory Sesamoid Patella Case D Vajano—p 1862
- Symptomatic Treatment of Encephalitic Parkinsonism G Aschieri—p 1866

Abnormality of the Knee—Vajano states that there are no records in the roentgen or anatomic literature showing the existence of accessory bone formations at the inferior and anterior part of the knee. The cases reported in the literature as accessory bone formations of the patella are either doubtful cases of such a condition or instances of other processes, such as bone emigration, imperfect ossification and fractures, or pathologic processes of the patella. The author reports an abnormality of the knee consisting in the formation of an accessory or sesamoid bone having the form and structure of the patella and situated in front of the tuberosity of the tibia at the point of insertion of the patellar ligament. The bone formation which appeared in the right knee of a person who suffered trauma two years before showed in the roentgenogram as a dense, even bordered and dark triangular shadow in the lateral view and as a patellar opaque shadow in the front view.

The roentgenograms of the same knee taken seven months after the accident did not show it. There was no fracture of the patella, the superior epiphysis of the tibia or the tuberosity of the tibia. The form, volume and structure of the bone formation and the roentgenogram did not correspond to the presence of a bone fragment, post-traumatic ossification of the patellar ligament or juxta-tibial osteoma. The author believes that in his case the bone formation had a congenital origin but a traumatic determining cause, since the lateral roentgenogram of the left knee of the same person shows an almost imperceptible shadow of the same form and in the same location. The front view of the left knee shows nothing abnormal. The author makes a differential study of the origin, development and significance of congenital accessory and sesamoid bones from the point of view of embryology and anatomy, human as well as comparative, and names the condition "congenital inferior patella or patellar sesamoid bones."

Arch Arg Enf d Ap Res y Tuberc, Buenos Aires

3 293 395 (Jul, Sept) 1935

- Partial Upper Thoracoplasty Technic R Finochietto and O A Vaccarezza—p 293
- *Apicocaudal and Hematologic Syndromes Following Phrenicectomy J Valdes Lambea—p 329
- Thoracoplasty Compression of Thorax by Use of Elastic Bandages After Operation R Finochietto and H D Aguilar—p 338
- Benign Spontaneous Pneumothorax B de Carvalho—p 351

Syndromes Following Phrenicectomy—Valdes Lambea, who has performed about 1,000 phrenicectomies, states that, in cases in which the diaphragm is immobilized by a radical phrenicectomy in an exceedingly high position, a syndrome may appear in the lung of the phrenicectomized side or in the blood. The pulmonary syndrome consists in atelectasis at the base of the lung, at the apex or at both, diminution of the respiratory murmur and presence of fine bubbling rales. Atelectasis is transient as a rule, but the rales are permanent. Because of the fact that the roentgenograms and the auscultatory signs of the syndrome are the same as those given by tuberculosis in evolution, the presence of the syndrome may be erroneously interpreted as a failure of phrenicectomy. The diagnosis is made by a comparison of the contrast that exists between the roentgenograms and auscultatory signs and the general improvement of the patient, proved by the lack of toxemia, cough, expectoration and fever and the normalization of the sedimentation speed of the erythrocytes. The hematologic syndrome following phrenicectomy in patients with tuberculous cavities containing caseous material consists in increased leukocytosis, with predominance of neutrophil granulocytes, and acceleration of globular sedimentation speed. The blood changes are due to the entrance of toxic material from the tuberculous foci into the circulation. The syndrome is transient and followed by improvement of the condition of the blood. The blood syndrome in patients in whom the toxemia is not intense consists in hyperglobulia with dyspnea and, in certain cases, with cyanosis. The number of erythrocytes rises, for instance, from 4,000,000 to 6,000,000, remains at the latter figure for some time and then returns to normal. Hemoptysis following phrenicectomy is rare. Only two cases of copious hemoptysis were seen by the author in about 1,000 phrenicectomies.

Revista de Cirugia, Buenos Aires

14 449 508 (Aug.) 1935

- *Spontaneous Amputation of Appendix Vermiformis E L Beluffi—p 449
- Anatomy of Radial Nerve at Region of Elbow Its Relation to Paralysis After Fractures I G Moreno—p 476
- History of Surgery The Surgeon in Old Rome A Zeno—p 489

Spontaneous Amputation of Vermiform Appendix—Beluffi states that spontaneous amputation of the vermiform appendix is rare. He reports five cases seen in a group of 500 appendectomies, and in one the amputation was incomplete. He concludes that the amputation is caused by perforating appendicitis which perforates the entire wall of the organ in a given annular zone. Local and mechanical factors, such as infection and adhesions, either congenital or acquired, may be associated in producing the amputation. The lost tissues of the surfaces after amputation are replaced by granulation tissues, which obtrude the surfaces. The stumps of amputated appendices, as a rule, undergo neither obliteration nor reabsorption. The preservation of their vitality and anatomic structure is secured.

by the persistence of the meso-appendix and by the neovascularization from the surrounding organs to which they adhere. The stumps of amputated vermiform appendices are potentially pathologic and may be the starting point of acute inflammatory processes. Their removal during appendectomy is necessary to secure definite recovery of the patient.

Archiv für klinische Chirurgie, Berlin

184 191 374 (Dec. 14) 1935 Partial Index

Microscopic Demonstration and Differentiation of Inorganic Tissue Framework in Surgery. Experimental Studies on Course of Inflammation. H. Meltzer—p. 191

Id. Studies on Normal and Inflamed Appendix. H. Meltzer—p. 210

Acute Peritonitis Caused by Virus of Inguinal Lymphogranuloma. S. Kondo—p. 249

*Embolism of Superior Mesenteric Artery. N. Okunj—p. 283

Significance of Syphilis in Surgery as Revealed by Serologic Studies. L. Josa—p. 299

Embolism of Superior Mesenteric Artery—According to Okunj, embolism of the superior mesenteric artery is a rare and grave condition of the abdominal cavity causing death in the greater number of cases. The diagnosis of the condition is made difficult by the fact that the same symptoms occur in a number of other acute abdominal diseases, such as ileus or peritonitis. The existence of a failing heart, or an acute ulcerative or vegetative endocarditis or of an atheromatous aorta is of importance in arriving at the diagnosis. Embolism of the superior mesenteric artery occurs as a rule in advanced age. Early operation consisting of resection of the involved segment of the intestine is the only method that may result occasionally in recovery.

Dermatologische Wochenschrift, Leipzig

101 1539 1566 (Dec. 7) 1935

Diagnosis of Syphilis from Dried Drop of Blood According to Chediak. J. Wendberger and K. Schreiner—p. 1539

*Reliability of Chediak's Dry Blood Method for Diagnosis of Syphilis. H. Wendeborn—p. 1543

Lupus Vulgaris of Scalp. Case. G. Trenk—p. 1547

Occupational Dermatitis of Millers. H. Hruszek—p. 1549

Use of Sulfur and Tar in Itching Dermatoses and Eczemas. Mitschke—p. 1550

Chediak's Dry Blood Method for Diagnosis of Syphilis—Wendeborn directs attention to Dahr's report of that author's experiences with Chediak's dry blood method for the diagnosis of syphilis (abstracted in THE JOURNAL, March 31, 1934, p. 1113). Since Dahr stressed as the advantages of this method that it is simple, rapid, economical and reliable, the author decided to investigate these claims. He points out that the rapidity of the method and the inexpensiveness are convincing and he gave his attention to the problem of reliability and the question of whether the method is really simple enough to be suitable for the general practitioner. In tests in 575 cases he carefully adhered to Dahr's modified technic of the Chediak method. As comparative methods he used the Kahn test and the quantitatively evaluated Wassermann test. The dry blood method gave positive results in thirty-six cases of latent syphilis in which either one or both of the comparative tests had failed. Compared to this positive balance the dry blood method had a negative balance of seventeen cases. The author reaches the conclusion that in view of its reliability the dry blood method is valuable for group and first examinations and in cases in which a rapid diagnosis is desirable. However, he states that it is not suitable for the consultation hour of the general practitioner and emphasizes that the dry blood test must be made by persons thoroughly experienced in laboratory work. He points out that the method is especially valuable in the cases in which the patients object to the withdrawal of blood from the vein and in cases in which the suspicion of a withdrawal of blood for the diagnosis of syphilis is to be avoided.

Deutsche medizinische Wochenschrift, Leipzig

61 2039 2078 (Dec. 20) 1935 Partial Index

Diagnosis of Hereditary Chronic Chorea and Its Significance for Racial Hygiene. F. Kehrer—p. 2039

*Treatment of Chronically Increased Intracranial Pressure. H. Roehagen—p. 2044

Value of Enucleation of Palatine Tonsils Determined in Five Hundred and Nineteen Cases. W. Zabel—p. 2046

Treatment of Increased Intracranial Pressure—Rosenhagen says that repeated spinal punctures are inadvisable in patients with increased intracranial pressure, because the reduc-

tion in pressure is not lasting, as the withdrawn quantity of fluid is rapidly replaced, quite often excessively ("artificial encephalohydrorrhea"), and repeated spinal punctures may thus favor the development of internal hydrocephalus. The author directs attention to other methods that make it possible to effect a reduction in pressure, such as the intravenous injection of hypertonic solutions of dextrose (40 per cent), magnesium sulfate (40 per cent) and sodium chloride (15 per cent). He describes several cases illustrating that the injection treatment with hypertonic solutions is helpful in chronically increased intracranial pressure of various origins, chronic meningitic conditions, serous meningitis, cases of increased fluid pressure in the ventricular system with and without hydrocephalus, sequels after cerebral apoplexy, cerebral tumors and their sequels, which are not amenable to surgical treatment, and disturbances that develop after concussion of the brain. He concedes that there are cases in which this treatment fails. In discussing the technic of the treatment, he says that the injection of magnesium sulfate frequently causes undesirable secondary effects, such as vertigo, anxiety and a feeling of heat or of suffocation. For this reason he gives magnesium sulfate and dextrose solution together. For instance, if 7 cc of dextrose solution is given, 3 cc of magnesium sulfate solution is administered, but if smaller doses are given, 1 or 2 cc of magnesium sulfate solution is administered with 3 or 4 cc of dextrose solution. In these combinations the injections are more effective than if dextrose solution is given alone. In cases in which the intravenous injection offers difficulties, the magnesium sulfate may be administered by rectum in a 45 per cent solution. It is advisable to mix 100 cc of this solution with 100 cc of oat meal gruel in order to facilitate retention in the rectum. In cases in which the administration of dextrose is inadvisable, as for instance in diabetes mellitus, the author injects 10 cc of a 15 per cent solution of sodium chloride.

Deutsche Zeitschrift für Chirurgie, Berlin

246 1 128 (Dec. 10) 1935 Partial Index

*Results with One Thousand Choledochotomies. F. Bernhard—p. 1

Traumatic Arterial Thrombosis of Forearm Appearing as Neuritis or

Tendovaginitis Stenosans Dolorosa. W. Schar and G. Neff—p. 95

Stimulation of Brain Regeneration Through Homoplastic Transplantation of Brain Tissue in Rabbits. F. Hugl—p. 114

Myosarcoma of Small Intestine. Case. G. von Knorke—p. 124

Results Following Choledochotomies—Bernhard reports 1,000 choledochotomies performed at the surgical clinic of the University of Giessen from 1895 to 1932. The numerical relationship between choledochotomies and cholecystectomies was as 1.5. The mortality was 9.9 per cent and was three times as great in men as in women. The most important cause of death was postoperative cardiovascular failure resulting from damage to the liver or pancreas. Peritonitis occupied a subordinate position as a cause of death. Icterus was present before the operation in 64 per cent, existed at some time in 17 per cent, and was absent in 19 per cent. The author considers icterus the most important indication for exploring the common duct. The common duct may be widened in the presence of a shrunken gallbladder or from pressure by enlarged lymph nodes. Stones were not found in 69 per cent, in 23.1 per cent they were present in the biliary passages alone, in 11.6 per cent in the gallbladder only and in 58.4 per cent in both the common duct and the gallbladder. The common duct was opened erroneously in thirty-five patients who had numerous small stones in the gallbladder. The author considers this indication for choledochotomy overrated. Stones were found in the common duct when the gallbladder was empty and shrunken. White bile was present in twenty-two cases and the mortality was twice the average. Stones were found in fifteen of thirty-eight patients who were submitted to a second choledochotomy. Choledochoduodenostomy is to be recommended for stricture of the lower end of the common duct and not as a primary operation for stones. An analysis of 180 deaths showed greater tendency to cholangitis in patients who have had several operations on the biliary tracts. Diabetes was more frequent after choledochotomies than after cholecystectomies. Liver cirrhosis developed later, and with greater frequency in neglected cases. Cancer of the liver and the biliary tracts developed fifteen years after the operation on an average, in twenty patients. Of 687 patients followed up, 389 recovered,

213 complained of mild symptoms and eighty-three complained of more pronounced symptoms. In order to determine the causes of postoperative morbidity, the author made functional studies of the contents of the stomach, determinations of sugar tolerance, and determinations of the lipase and diastase content of the blood. Actual recurrence of stones was rare. Persistence of symptoms was due principally to cholangitis and liver damage with an abnormal blood sugar curve. Chronic pancreatitis was present in more than 10 per cent. Subacidity and anacidity were found with particular frequency in the presence of pronounced complaints. In the treatment of postoperative complaints the author stresses the value of pepsin-hydrochloric acid and of a remedy consisting of a preparation of mercury, podophyllin, melissa, camphor and caraway.

Klinische Wochenschrift, Berlin

14 1809 1848 (Dec 21) 1935 Partial Index

Diurnal Periodicity of Body Temperature in Human Beings B de Rudder and G A Petersen—p 1814

Morphologic Investigations on Function of Cardiac Muscle R Bohmig—p 1816

Diagnosis of Pernicious Anemia H Reichel—p 1818

Changes in Heart Beat Sequence in Acute Pressure Exertions W Borst—p 1821

*Sympathetic Disturbances Following Encephalography H Boeters—p 1829

Sympathetic Disturbances Following Encephalography—Boeters points out that the introduction of air into the cerebral ventricles causes, in addition to a general feeling of indisposition and occasionally vomiting, also temporary disturbances in the thermoregulation and in the sudoregulation. He says that Hoff called attention to the fact that encephalography produces experimental conditions, which, in connection with observations in cases presenting organic lesions of the brain, give some insight into the course and the interrelations of the central sympathetic regulatory mechanisms. In observations on human subjects and on animals, Hoff found that the morphologic blood picture is subject to a central regulation and that the cerebral irritation produced by the introduction of air causes a change in the entire sympathetic system with increased temperature and metabolism, acidosis, hyperthermia and hyperglycemia. At the same time there develop changes in the potassium, calcium and cholesterol values. The author decided to study the disturbances that develop as the result of the irritating action of the air introduced in the course of encephalography. He paid especial attention to the changes in the blood sugar values, making serial tests on forty five patients. He found that the introduction of air, irrespective of the quantity, caused a considerable hyperglycemia, but that after from one to two hours the original values had been reached again. The greatest increase in the blood sugar values (more than 100 per cent) was observed in children. In adults, the blood sugar values usually increased by from 40 to 80 per cent. However, in epileptic patients with hydrocephalus, in incompletely cured cases of dementia paralytica and in a case of Pick's atrophy, only a slight hyperglycemia was observed. Even cases of cerebral tumor with symptoms of pressure showed only slight increases. In discussing the significance of these observations, the author points out that the patients in whom the increase in the blood sugar was slight experienced only slight subjective discomfort. He thinks that this is due to the fact that, because of a change in the intracranial pressure the spontaneous sympathetic regulation had undergone a change in these patients. The hyperglycemia precedes all other sympathetic changes that develop after encephalography, that is, it is the most sensitive indicator of the irritation of the central sympathetic regulatory mechanism.

Wiener klinische Wochenschrift, Vienna

48 1567 1598 (Dec 20) 1935 Partial Index

Albuminuria During Childhood K Dietl—p 1567

New Observations in Research on Cancer A Missriegler—p 1569

*Simple Method for Determination of Urobilinogen in Stool H Fleischacker and H Seyfried—p 1573

Suggestions for Treatment of Intra Uterine Asphyxia A F Hecht—p 1575

Short Wave Therapy of Peripheral Vascular Disturbances H Scholz—p 1576

Determination of Urobilinogen in Stool—Fleischacker and Seyfried mix the stool thoroughly, weigh it and to 5 Gm add 1 cc of glacial acetic acid. Then they add 10 cc of alcohol (95 per cent) and 10 cc. of ether and filter the suspension.

To 2 cc of the filtrate, 2 cc of distilled water is added and from this is formed a series in geometrical progression, so that finally there is 2 cc of fluid in each tube. Then they add 1 cc of paradimethylaminobenzaldehyde to each tube. The reaction value is that degree of attenuation in the tube which just barely shows a rose color when held against a white background. In some cases the rose color is still rather intense in one tube whereas the following tube has not the slightest trace of it. In such cases the authors marked the reaction with a plus sign. They examined the reliability of this method in 148 cases by comparing the results in the attenuation series with the photometer values detected with Heilmeyer's method. It was found that when fresh stools were examined the two test methods did not reveal comparative values, but that there was a considerable degree of conformity between the results of the two tests when the stools were examined from three to eight hours after defecation. The authors explain this phenomenon and point out that tests with the attenuation series in fifty persons with normal hemoglobin metabolism gave values between 1.64 and 1.256, but they believe that the functional capacity of liver, intestine, bone marrow and other organs doubtless plays an important part. They think that values over 1.256 and under 1.64 are definitely pathologic and that even the values within the normal range may be pathologic (for instance, in case of severe anemia).

Treatment of Intra-Uterine Asphyxia—Hecht describes observations on a new-born infant that had attacks of asphyxia and respiratory arrest during the second week of life. He found that the cardiac mechanism had been greatly changed in that the normal transmission had been replaced by an atrio-ventricular automatism. After explaining the mechanism and effect of this automatism, he points out that, if the intra-uterine asphyxia has the same cardiac mechanism as the one he described in the infant, it too will have a tendency to elicit inspiratory movements, which, however, would be undesirable in this case because they would lead to the aspiration of amniotic fluid. He admits that intra-uterine asphyxia should be counteracted by obstetric measures by accelerating as much as possible the process of birth. However, it is also important to prevent the inspiration of amniotic fluid. He suggests that injections of atropine administered to the mother might counteract the atrioventricular automatism. Moreover, the mother should be told to make a hyperventilatory inspiration as often as possible. Oxygen inhalation on the part of the mother might also eventually be helpful, that is, all efforts should be made to depress the respiratory center of the fetus until the child is born and able to make its first inspiration. He stresses that cardiac stimulants should not be administered to the mother, because this would stimulate the fetal respiratory center and thereby lead to the aspiration of amniotic fluid.

48 1599 1630 (Dec 27) 1935 Partial Index

Mistakes and Dangers in Blood Transfusion F von Schurer—p 1599

Results of Determination of Urobilinogen in Stool in Cases of Disordered Pigment Metabolism H Fleischacker and H Seyfried—p 1604

Röntgenologic Symptomatology of Sigmoiditis E Zdansky—p 1608

*Cell Picture of Tuberculous Focal Reaction in Comparison with General and Local Blood Picture H Baar—p 1609

Value of Some Carcinoma Reactions in Early Diagnosis of Uterine Cancer H Belohradsky—p 1612

*Treatment of Adrenal Insufficiency W Raab—p 1620

Cell Picture of Tuberculous Focal Reaction—Baar calls attention to Helmreich's studies on the so-called local blood picture, by which that author means the morphologic blood changes at the site of inflammation. In tuberculosis he examines the blood of a Pirquet papule, which he considers the manifestation of a perifocal reaction that has been projected to the skin. He thinks that the morphologic changes in the blood of the Pirquet papule reflect the reactions that take place in the surroundings of the tuberculous foci in the organism. The author considered it important to know whether the reaction of the organism is uniform throughout or differs in various regions of the body, or whether the allergic reaction may be limited to one organ. To answer this question, he studied the cytomorphologic changes in the tuberculous focus and compared them with the peripheral and local blood pictures. His studies were made on patients with tuberculous pleurisy and with tuberculous meningitis. He examined the pleural exudate and

the cerebrospinal fluid before an application of tuberculin and from twenty-four to forty-eight hours after an intrapleural or an intraspinal injection of from 0.1 to 0.5 mg. of old tuberculin, blood specimens from the finger tip and from the Pirquet papule were examined at the same time. He describes and discusses the results he obtained in these studies and reaches the conclusion that the local blood picture according to Helmreich cannot be considered a projected perifocal inflammation, but he concedes that it provides a better insight into the processes that take place in the focus of the disease process than does the general blood picture. He also found that the allergic reaction may be limited to some organs and persists longest at the focus of the disease.

Treatment of Adrenal Insufficiency—Raab shows that in the treatment of Addison's disease it is possible to reduce the required quantity of cortex extract by the administration of comparatively large doses of sodium chloride (from 8 to 20 Gm. each day). The use of sodium chloride seemed indicated in view of the reduction in the chloride content of the serum of patients with Addison's disease. He says that the sodium chloride may be given partly by intravenous infusion and partly by means of foods that have a high sodium chloride content. As another means of reducing the high cost of the treatment with adrenal cortex extract he suggests the use of the corticotropic hormone of the anterior pituitary, which is considerably less expensive. Since the pigmentation of Addison's disease does not yield completely even to a successful treatment with adrenal cortex extract, vitamin C preparations have been tried in order to counteract the pigmentation, but without satisfactory results. In this connection the author suggests that the hypophyseal pigment hormone might eventually be tried. He emphasizes that insulin treatment must be avoided in patients with Addison's disease because of their great sensitivity to this substance, relatively small quantities have been known to be fatal. The diet of patients with Addison's disease should be easily digestible and should contain large amounts of carbohydrates.

Zeitschrift f. Geburtshilfe u. Gynäkologie, Stuttgart 112: 1124 (Dec. 13) 1935. Partial Index.

*Further Efforts for an Accelerated Pregnancy Reaction. R. Bruhl and W. Rieckhoff—p. 1.

Experimental Studies on Temporary Sterilization by Hormones and Removal of Sterility Caused by Hormones. C. Clauberg—p. 4.
Demonstration and Significance of Anterior Pituitary Hormones A and B and Consideration of One Hundred Cases. T. Heimann and W. Leschnitzer—p. 23.

Influence of Physical Exertion and of Birth on Circulation and Metabolism of Pregnant Parturient and Puerperal Women. W. Franz—p. 32.

Rapid Pregnancy Reaction—Bruhl and Rieckhoff direct attention to the pregnancy test of Konsuloff, who found that hypophysectomized frogs become black following the injection of pregnancy urine into their lymph sac. The melanophore hormone eliminated in urine of pregnant women causes a diffusion of the pigment in the skin of the frog in from one to two hours. The blackening of the hypophysectomized animals becomes more noticeable because they become rather light following hypophysectomy. The authors decided to investigate the reliability of the Konsuloff test. In describing their method of hypophysectomy, they show that the hypophysectomized animals should be given several days to recuperate before they are used for the pregnancy test. In the testing of pregnancy urines the authors at first followed the directions given by Konsuloff, who claimed to have obtained results that were 100 per cent correct; however, they secured only fourteen positive reactions in twenty-five pregnant women. Further investigations disclosed that the concentration of the urine was highly important for the outcome of the test and a method was devised for the use of concentrated urine. The use of concentrated urine produced positive results in all cases of pregnancy and also in cases of carcinoma and in some cases of adenitis. Thus there is the dilemma that if unconcentrated urine is used the reaction will be negative in some cases of pregnancy, and if concentrated urine is used it will be positive in some conditions other than pregnancy. The authors reach the conclusion that the Konsuloff frog test is not sufficiently exact to replace the Aschheim-Zondek test.

Sovetskaya Vrachebnaya Gazeta, Leningrad

Nov. 30, 1935 (No. 22) pp. 1721-1800. Partial Index.
Method of Treating Intestinal Toxemia of Nurslings. V. I. Morev—p. 1721.
Advances and New Therapeutic Methods in Diseases of Digestive Organs. D. Lampert—p. 1727.
*Symptoms of Pulmonary Suppuration and Its Treatment with Methenamine and Autohemotherapy. V. S. Trefilov—p. 1735.
Intermittent Physical Therapeutic Methods in Pulmonary Tuberculosis. Ya. O. Kryzhevskiy, B. M. Broderzon and M. D. Vainshtein—p. 1743.

Pulmonary Suppuration—According to Trefilov, abscess and gangrene of the lung represent various stages of essentially the same morbid process. Pulmonary suppurations run a variable course and present at times considerable diagnostic difficulties. The absence in the roentgenogram of a cavity does not rule out an abscess. In many cases roentgen examination reveals infiltration only. The diagnosis is made from clinical data, laboratory observations and the history. Grip and its complications play a predominant part in the etiology and pathogenesis of pulmonary suppuration. Grip pneumonias leave behind them pathologic alterations in pulmonary tissues which later favor the development of pulmonary suppuration. Of the author's thirty-two patients, 78 per cent gave a history of grip with pulmonary complications. The treatment consisted of injecting, on alternating days, 10 cc. of a 40 per cent solution of methenamine in the cubital vein. At intervals of two or three days from 3 to 4 cc. of blood was withdrawn from a cubital vein and injected in the cellular tissue of the chest. This was gradually raised to 10 or 12 cc. The author treated ten acute and eight chronic cases of pulmonary suppuration. Eleven of the patients were discharged as completely recovered, four were markedly improved, one was not improved and two died. The author considers this combined method the most effective of the conservative methods. He feels that it ought to be tried in all limited suppurations, acute and chronic, exclusive of cases characterized by cachexia.

Finska Lakaresällskapet's Handlingar, Helsingfors

77: 651-735 (Nov.) 1935.

*Terminal Stages in Diseases of Liver. R. Ehrstrom—p. 651.
Vaccination Against Typhoid Paratyphoid. O. Sievers—p. 663.
Neurology of Schizophrenia. J. Runeberg—p. 690.
*Senear-Usher's Disease. Case. R. Wirkberg—p. 709.

Terminal Stages in Diseases of Liver—Ehrstrom treats of the terminal stages of hepatic disorders in four groups, the first of which is characterized by conditions in which infectious factors dominate, the second by a marked chronic jaundice, an "icterus gravis," with a grave disturbance due to the organism's inability to utilize the supplied fat as a contributing cause of death and of many symptoms including a possible hemorrhagic diathesis. In the third group are the cases with chronic portal stasis and constantly recurring ascites, together with an albumin hunger analogous to the fat hunger in the second group. The fourth form, relatively rare, is seen in the syndrome with acute onset and rapid fatal outcome designated in the literature by various terms such as cholemia, hepatargia, hepatic intoxication and la grande insuffisance hépatique and depends, the author concludes, on an absolute hepatic insufficiency or hepatargia. He advocates omitting the term "choleemia" as a designation for hepatic disturbance to avoid unnecessary confusion and for the present rejects the term "relative insufficiency" because as yet no sharply enough defined clinical picture corresponds to it.

Senear-Usher's Disease—Wirkberg says that about thirty cases of this disorder have been reported and describes the first instance to be reported from Scandinavia, in a man aged 24. On the face the disease localized to the nose and adjacent parts of the cheeks and was remarkably like lupus erythematoses. The scales, however, were softer and more easily removed, and on the trunk the condition greatly resembled pemphigus foliaceus. The elements were about the size of an almond and were covered by a thin soft crust. Treatment consisted in external application of potassium permanganate together with substances containing sulfur and tar, and in administration of calcium and arsenic. A complex carbamide compound of trisulfonic acid injected intravenously had no demonstrable by-effects. On discharge after two and a half months' treatment the processes in the face and anterior part of the trunk were almost completely healed, some loose crusts remained on the back.

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A STATISTICAL STUDY OF 2,921 - CASES OF APPENDICITIS

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From a study of a series of 842 cases admitted to the Cincinnati General Hospital from Jan 1, 1915, to Jan 1, 1924, reported in 1926, it was deduced that (1) an unusually high percentage of cases entered the hospital presenting perforative appendicitis and its complications, abscess or peritonitis and (2) there still was some belief among our hospital staff that surgical treatment of appendicitis should be deferred for an interval rather than resorted to in the acute stage of the disease. This statistical study has been continued to include the years of 1924 through 1933 inclusive to determine whether the adoption in 1922 of immediate operation for acute appendicitis has changed in any way either of these deductions. We also present at this time our total statistics of this series of cases of appendicitis.

The series includes 2,921 cases of appendicitis admitted to the Cincinnati General Hospital between Jan 1, 1915 and Jan 1, 1934, a period of nineteen years. The vast majority of these cases have been treated in the surgical service of the hospital, although this number includes the few cases treated in the medical service. The preoperative, operative and postoperative data in the series have been studied in an effort to arrive at conclusions that may be of value in our subsequent treatment and are presented in the form of tables and charts.

PREOPERATIVE DATA

General—The number of cases of appendicitis admitted to the hospital has notably increased each year, so that in 1932 there were four and a half times as many admissions as there were in 1915, or an increase of approximately 350 per cent. Our charts show, as has been repeatedly shown before, that appendicitis is a disease of adolescent and young adult life, as two thirds (68.6 per cent) of the patients were between the ages of 10 and 30 years (chart 1). It occurred more frequently in children under 13 years than in any decade over 40. Only forty-three cases occurred in persons over 60. The disease is almost twice as common in males as in females. In this series 63.6 per cent of the patients were males and 36.3 per cent females. Race does not seem to be an important factor.

History and Physical Observations—One of the most striking observations in the preoperative data is the long interval of time that elapsed between the onset of the acute attack and admission to the hospital (table 1). With the knowledge of the disease that should be common to the physicians of the community, it is surprising to find that the average elapsed time between the onset of the attack and admission to the hospital is about four days (3.8 days, or 91.2 hours). When one breaks the series of acute cases into three groups—unruptured cases, perforated with abscess formation, and perforated with general peritonitis—the average elapsed intervals of time between onset of symptoms and operation are respectively 44, 129.6 and 80.64 hours. It is to be noted that the average elapsed time for the entire series was decreasing up to 1932 but that it has been higher during the past two years. This long interval is undoubtedly responsible for the high percentage of perforated appendices in the series and justifies the statement that, if results in the treatment of appendicitis are to be notably improved, physicians must advise and patients agree to earlier surgical treatment. It will subsequently be shown how advantageous it is from the standpoint of mortality, complications and period of hospitalization to operate before perforation of the appendix has taken place.

A review of the histories of 2,035 patients who entered the hospital with acute appendicitis shows that 837, or 41.12 per cent had had previous attacks while 1,198 or 58.88 per cent, entered in the first attack. When one considers that 42.5 per cent of the acute cases presented perforated appendices on admission, one realizes the danger of treating expectantly the first attack of appendicitis in the hope that it will subside.

With regard to the symptoms and signs of acute appendicitis, slightly more than half of our cases (53 per cent) presented what might be called a "typical" history (table 2). By that we mean the usual story of abdominal pain located most frequently in the epigastrium or around the umbilicus followed by nausea and vomiting, and localization of the pain in the right lower quadrant (McBurney's point). However, abdominal pain of some kind was the most frequent symptom, occurring in 94 per cent of the cases. Pain on pressure over the appendix was present in nearly 100 per cent of the cases, and we consider this the most important single symptom. When this tenderness is present the burden of proof is certainly on the examiner to show that it is not due to acute appendicitis. The pain of pressure, of course, varied a great deal in type, intensity and radiation. Muscle spasm and rigidity were usually, but not always, present. In some cases pain was elicited only on very deep pressure, in these cases the appendix was usually behind the cecum or in the pelvis. Nausea and vomiting are the next

most reliable symptoms, occurring in from 70 to 80 per cent of the cases. These symptoms occurred usually in the first few hours of the disease, but in some cases did not appear until late.

A rectal or pelvic examination was of great aid in establishing a diagnosis, tenderness, induration or a

TABLE 1—Average Elapsed Time Between Onset of Acute Attack and Admission to Hospital

Year	Elapsed Time in Days	Year	Elapsed Time in Days
1915	4.7	1925	3.2
1916	6.5	1926	3.8
1917	6.1	1927	2.7
1918	5.8	1928	2.1
1919	3.5	1929	3.05
1920	4.8	1930	2.8
1921	4.3	1931	2.5
1922	4.3	1932	2.9
1923	3.9	1933	3.0
1924	3.7		
Average for all cases		(91.2 hours)	3.8
Average for unruptured cases		(44 hours)	1.83
Average for abscess cases		(129.6 hours)	5.43
Average for cases presenting general peritonitis		(80.64 hours)	3.36

TABLE 2—Clinical Data in Cases of Acute Appendicitis

Total Cases	Nausea	Vomiting	Abdominal Pain	Rectal Tenderness	Purgatives	Typical History
1460	1106 78%	1081 73%	1387 94%	655 44%	523 36%	778 53%

mass was felt in almost half of the cases (44 per cent). Rectal examination is of particular value in children in whom the diagnosis is frequently very difficult.

Approximately a third of the patients (36 per cent) (table 2) had taken some form of a purgative before admission to the hospital. Among 353 cases of acute appendicitis, studied during the past five years, in which a history of having taken purgatives was obtained, the incidence of perforative appendicitis was 34.3 per cent. This was considerably higher than the incidence of perforation among the other 656 acute cases treated during the same period, in which a history of taking purgatives was not obtained. Often the purgative was taken by the patient before seeking medical help, but altogether too frequently it was prescribed by the attending physician, apparently without regard for the consequences. Often the story was given us by a patient that he went to the "corner drug store" and was told by the druggist that he had "just the thing for the gas on your stomach." Radio announcements have not helped to reduce the mortality of acute appendicitis. In one day we heard forty-four different announcements over the radio for medicines which would relieve abdominal pain, gas, constipation, distention, and the like.

The average temperature, pulse rate and leukocyte count in the acute cases on admission show a very striking uniformity throughout the years (table 3). The temperature is rarely over 100 F. in simple, acute cases but may be much higher (102-104) in cases of gangrenous appendicitis and peritonitis. The temperature in children with simple acute appendicitis may be elevated to 102 or 103. The leukocyte count is found to vary with the degree of infection, being much more elevated in cases of gangrenous or perforated appendicitis.

OPERATIVE DATA

It is seen from table 4 that, of the 2,921 cases, 2,035 were diagnosed as acute and 810 as chronic, while in fifty-nine cases a mistaken diagnosis of appendicitis

was made. The diagnosis of these cases was made either at the operating table alone or at the operating table and in the laboratory. In seventeen cases in which operation was not performed, the diagnosis was made at the autopsy table. In the earlier histories it is rare to find a pathologic diagnosis other than that made at the operating table, but this is usually admitted to be sufficient.

Of the 2,035 cases of acute appendicitis in which operation was performed, 1,270, or 57.5 per cent, were found in all stages of acute inflammation, including gangrene, but perforation had not occurred, in 865, or 42.5 per cent, operation revealed that perforation had occurred and there was either a localized abscess or varying degrees of peritonitis. As will be seen in table 5 the yearly percentage of perforative appendicitis varied between 31 and 60 per cent. Just as the time interval between the onset of the attack and admission to the hospital has not decreased appreciably with the years, so the percentage of perforative appendicitis has likewise not appreciably diminished. There is seen to be a very close parallel in the increase of perforative appendicitis with the increase of time from onset of symptoms to time of admission to the hospital. Of the 865 cases which were found to be perforated at operation 576 (28.3 per cent of the total cases, or 66.3 of the total perforated appendices) presented localized abscesses, and 289 (14.2 per cent of the total cases, or 33.3 per cent of the total perforated appendices) presented varying degrees of peritonitis. The peritonitis was advanced and widespread in the majority of the cases.

TABLE 3—Average Temperature, Pulse Rate and Leukocyte Count in Acute Cases on Admission

Year	Number of Acute Cases	Average Temperature	Average Pulse Rate	Average Leukocyte Count	Total Number of Leukocyte Counts
1915	44	100.2	98	20,800	20
1916	59	100.9	102	16,800	36
1917	63	100.1	112	19,700	27
1918	44	100.2	98	23,100	37
1919	50	100.0	97	19,600	41
1920	64	100.2	93	16,600	52
1921	86	100.2	100	17,000	61
1922	98	100.1	99	16,700	93
1923	74	100.3	100	16,600	67
1924	77	99.1	98	17,700	72
1925	104	100.2	100	16,400	101
1926	112	100.1	97	17,500	103
1927	120	100.1	94	15,300	114
1928	133	100.2	96	16,200	137
1929	162	100.4	99	14,300	158
1930	134	100.4	102	18,600	127
1931	174	100.2	100	15,200	171
1932	232	99.4	99	14,400	235
1933	206	99.5	98	14,500	197
Totals	2,035				1,841
Averages		100.1	99	17,000	

TABLE 4—Pathologic Condition as Determined by Operation or Autopsy

Year	Acute	Chronic	Mistaken Diagnosis of Appendicitis	Autopsy Diagnosis	Grand Total
1915 to 1933	2,035	810	59	17	2,921

Seventy-two different surgeons operated in 2,806 cases of appendicitis, forty-one surgeons performed less than ten operations each, nine surgeons from ten to twenty operations, six surgeons from twenty to forty operations, and seven surgeons from forty to 150 operations. Nine surgeons performed 150 appendectomies or more. With such a large number of surgeons oper-

ating, the mortality of the individual surgeons varied greatly. The total mortality rate for all cases was 6.3 per cent for the nineteen years.

As was stated in the opening paragraph, the rule through the past several years has been to operate in all cases of acute appendicitis as soon as the diagnosis

TABLE 5—Pathologic Changes in Acute Cases as Determined by Operation or Autopsy

Year	Number of Acute Cases	With Abscess		With Peritonitis		Total Cases of Perforation	
		Number	Per Cent	Number	Per Cent	Number	Per Cent
1915	44	19	43.2	5	11.3	24	54.5
1916	59	25	42.4	3	5.1	31	52.5
1917	62	24	38.7	3	4.8	27	43.5
1918	44	20	45.4	4	9.1	28	63.6
1919	50	16	32.0	4	8.0	20	40.0
1920	64	29	45.3	6	9.4	31	48.4
1921	86	40	46.5	12	13.9	62	71.4
1922	98	36	36.7	7	7.1	32	32.7
1923	73	29	39.7	7	9.6	41	56.1
1924	77	31	40.2	10	13.0	41	53.2
1925	111	2	1.8	17	15.3	49	44.1
1926	112	34	30.3	19	17.0	53	47.3
1927	120	36	30.0	9	7.5	46	38.3
1928	133	41	30.8	13	9.8	54	40.6
1929	115	30	26.1	10	8.7	40	34.8
1930	134	31	23.1	31	23.1	62	46.3
1931	174	26	15.0	31	17.8	57	32.8
1932	23	31	13.4	64	27.8	95	40.9
1933	96	53	55.2	29	30.2	82	85.4
Totals	2,060	116	5.6	259	12.6	865	42.0

has been established. The incisions used in operating for appendicitis have varied somewhat according to the tastes of the individual surgeons. Prior to 1922 the right rectus incision, was used as a routine whereas since 1922 the McBurney incision has been the routine incision. We believe that with almost no exceptions acute appendicitis can be adequately treated through the McBurney approach, whether it is an unruptured appendix, an appendiceal abscess or peritonitis. Operations so performed are less severe and postoperative complications such as obstruction, broken-down wounds and ventral hernias are less common. Adequate drainage is more easily and safely secured through a McBurney incision.

In 2,680 of the 2,806 surgical cases the appendix was removed at the primary operation, in 126 cases it was not removed. The diagnoses of the cases in which the appendix was not removed at the primary operation were (1) perforative appendicitis with abscess, eighty-seven cases, (2) perforative appendicitis with peritonitis, thirty-five cases, and (3) perforative appendicitis with peritonitis and intestinal obstruction, four cases. In fifteen of these cases the appendix was removed at a subsequent operation.

A description of the operations in this series will not be detailed. The common practice, as has been stated before, since 1922 has been to use the McBurney incision in all cases in which the diagnosis of appendicitis seemed more reasonable. The subsequent steps in this operation depend on the conditions found.

(a) Acute nongangrenous appendicitis. The appendix is delivered, the vessels of the meso-appendix are ligated with silk by the transfixion method and the meso-appendix is divided to the base of the appendix. A peritoneal cuff is dissected back from the base of the appendix, the appendix crushed, ligated with catgut and excised. The stump is treated with pure phenol (carbolic acid), followed by alcohol and inverted under a purse string suture of fine silk. A second suture or a series of Halsted mattress sutures is used to cover the inverted stump. Great care is exercised to cover

all raw surfaces, such as the divided meso-appendix. The peritoneum and muscular layers are closed throughout with silk.

(b) Acute unruptured gangrenous appendicitis. The same general procedure is carried out except that catgut is used for ligatures and suture material save for inversion of the appendiceal stump, where silk is always used. In the presence of turbid intraperitoneal fluid, drainage is never employed unless smears of this fluid show many organisms. If the removed appendix tested by water pressure shows no perforation, drainage is almost never employed, even though there may be some organisms in the turbid fluid. An exception to this rule is when grossly necrotic tissue must be left behind in the region of the removed appendix.

(c) Appendiceal abscess. An attempt is always made to remove the appendix, but in very ill patients the search for the appendix is not unduly prolonged. The abscess cavity is drained with cigaret drains and the wound closed very loosely with catgut about the drains. We are not sure that any closure of the wound should be attempted, for, as has been pointed out by others, sloughing of the tissues, due to the infection always present, may well be greater if sutures are used.

(d) Acute perforative appendicitis with peritonitis. The appendix is removed, if possible without too much manipulation, and drainage with soft cigaret drains is established through the McBurney incision. Care is exercised in the type of drain employed and its proper

TABLE 6—Postoperative Wound Infections in Cases Without Drainage

Total number of operations without drainage	1,881
Total number of wound infections	124
Acute unruptured	76
Acute gangrenous with cloudy fluid (not drained)	23
Chronic	2
Percentage	0.06

TABLE 7—Mortality by Yearly Periods

Year	Patients Operated On	Operative Deaths	Operative Mortality	Patients Not Operated On	Non-operative Deaths	Total Mortality
Right rectus incision used as a routine						
1915	63	6	9.5	1	1	10.9
1916	78	4	5.1	3	0	4.9
1917	17	4	23.5	5	0	4.8
1918	46	5	10.8	9	1	10.9
1919	59	7	11.8	8	0	11.4
1920	96	15	15.6	12	0	13.9
1921	120	13	10.8	17	2	10.9
Average 1915 to 1921 inclusive 9.3%						
McBurney incision used as a routine						
1922	170	6	3.5	14	2	5.3
1923	90	2	2.2	13	1	2.9
1924	128	11	8.6	0	0	8.6
1925	140	11	7.8	0	0	6.4
1926	180	8	4.4	0	0	4.4
1927	173	6	3.4	1	1	4.2
1928	224	10	4.4	1	1	4.8
1929	250	13	5.2	12	0	5.8
1930	209	12	5.7	5	0	5.5
1931	211	9	4.3	10	1	4.9
1932	291	12	4.1	7	1	4.3
1933	244	18	7.3	6	1	7.6
Totals	2,406	176	7.3	115	13	6.4
Average last 12 years 5.4%						

placement, for it would appear that fecal fistula and intestinal obstruction are in part dependent on these factors.

The incidence of wound infection following operation in which drainage was not employed may be seen in table 6 as 0.06 per cent. In practically all these cases the infection was superficial to the muscular layers or

was a simple stitch abscess. There were only three instances of a completely broken down wound with evisceration of the intestine. It is interesting to note that all of these occurred through the right rectus incision. Twenty-three of these infections were in cases of acute gangrenous appendicitis presenting cloudy peritoneal fluid in which the wounds were closed without drainage. In none of these did peritonitis or a

on, with thirteen deaths, a mortality rate of 11.3 per cent. The total mortality rate for all the cases, including those in which operation was not done, was 6.4 per cent. It is to be noted that the thirteen patients who died in the nonoperative group had advanced peritonitis on admission to the hospital and died within the first twenty-four hours.

An examination of the operative mortality by one year periods shows a considerable variation. It is interesting to note the decrease in the mortality rate with the advent of the routine use of the McBurney incision in 1922. Prior to this time 409 patients with acute appendicitis had been operated on through a right rectus incision and the mortality rate was 9.5 per cent. Since 1922 there have been 1,626 patients with acute appendicitis operated on through a McBurney incision with a total mortality rate of 5.4 per cent. The significance of this contrast is slightly altered by the fact that the incidence of the cases presenting abscess and peritonitis fell from 51.3 per cent in the first series to 41.6 per cent in the second. While the decreased mortality cannot be attributed to the McBurney incision alone, we feel convinced that the right rectus incision, by its greater magnitude and its attendant complications, contributed to the mortality of the very ill patients. It is sad to note, however, that there has been an increase in the operative mortality during the past few years when the interval of time between onset of symptoms and operation has increased. This fact leads one to remember Garlock's¹ statement that "the mortality rate of acute appendicitis is directly dependent upon the length of time between the onset of symptoms and operation."

An examination of table 8 shows in a striking way the differences in the mortality following operations in the different varieties of appendicitis. In 1,147 cases of acute unruptured appendicitis there were ten deaths, a mortality rate of 0.86 per cent (in the last 587 cases, three deaths, or a rate of 0.51 per cent), in 734 cases of chronic appendicitis there was one death, a mortality rate of 0.13 per cent, in 576 cases of perforative appendicitis with abscess there were sixty-six deaths, a mortality rate of 11.4 per cent, and in 280 cases of perforative appendicitis with spreading or generalized peritonitis there were ninety-five deaths, a mortality rate of 33.9 per cent. Keyes² has reported similar statistics with similar results. This difference in mortality is sufficiently striking to warrant the statement that, in the absence of very definite contraindications, operation is immediately advisable in all cases of nonperforative acute appendicitis. The mortality rate in such cases (0.86 per cent) does not warrant the waiting for an "interval" in the hope that the acute attack will subside.

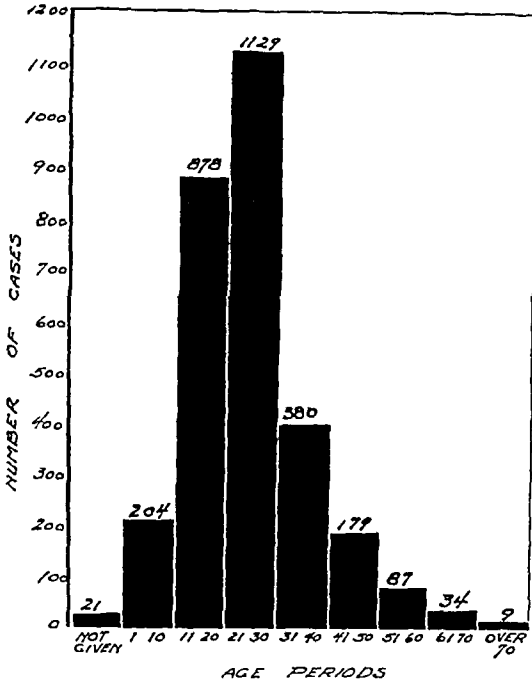


Chart 1—Age periods of patients in the series

localized abscess develop. This low percentage of infection would justify the statement made previously that drainage in these cases is not necessary. The incidence of infection has decreased since 1922 in spite of the fact that in acute cases without cloudy fluid and in chronic cases the wounds have been closed with silk as a suture material.

The complications that accompanied the primary condition on the admission of patients, or developed subsequently, form a large and miscellaneous group: tuberculous peritonitis, four cases; fecal fistula, twenty-

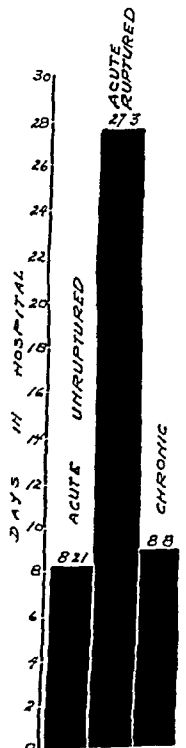


Chart 2—Days of hospitalization in acute unruptured, acute ruptured and chronic cases of appendicitis

TABLE 8—Mortality in Operations According to Diagnosis

Diagnosis	Patients Operated On	Number of Deaths	Mortality per Cent
Acute unruptured	1,147	10	0.86
Ruptured with abscess	576	66	11.4
Ruptured with peritonitis	280	95	33.9
Mistaken diagnosis of acute appendicitis	39	4	6.7
Chronic	734	1	0.13
Totals	2,806	176	6.3

nine, intestinal obstruction, twenty-three, subphrenic abscess, thirteen, liver abscess, eight, pneumonia, thirty-two, pulmonary embolism, four, pelvic abscess, forty-five, and numerous other complications. Fourteen cases occurred in pregnant women with only one abortion.

The mortality data are presented in table 7. In the nineteen year period from 1915 to 1933 inclusive, 2,806 patients with appendicitis were operated on with 176 deaths, or an operative mortality rate of 6.3 per cent. One hundred and fifteen patients were not operated

¹ Garlock, J. H. Acute Appendicitis. Controllable Mortality Factor. *Ann. Surg.* 23: 248 (Feb.) 1934.
² Keyes, E. L. The Mortality from Appendicitis and the Cause of Death Following Appendicitis. *Ann. Surg.* 99: 47 (Jan.) 1934.

From a purely economic standpoint early diagnosis and operation are very important. The average total days of hospital stay in cases of acute unperforated appendicitis was 8.21 days, whereas in those presenting perforation and formation of abscess or peritonitis the average hospital stay was 27.3 days (chart 2).

SUMMARY

In a report of 2,921 cases of appendicitis admitted to the Cincinnati General Hospital it is noted that appendicitis is a disease of adolescent and young adult life and that it is twice as common in the male as in the female.

The average elapsed time (3.8 days) between the onset of symptoms and admission to the hospital was much too long for proper surgical treatment and the mortality rate will remain high as long as patients are not operated on earlier. Complications will also be frequent and the hospitalization period long.

Approximately 60 per cent of the acute cases were admitted during the first attack and approximately 40 per cent of all cases were admitted after the appendix had ruptured. These facts reveal the danger of expectant treatment.

The use of purgatives was found to lessen very definitely the patients' chances of recovery. The incidence of perforation and death was much higher among those who had taken cathartics.

In more than 40 per cent of the cases of acute appendicitis, perforation had occurred before admission to the hospital and the percentage of perforations has decreased very little during the last few years. Over 98 per cent of the deaths from appendicitis were due to the complications accompanying perforation.

The mortality rate in acute unruptured appendicitis (0.86 per cent) was low in comparison with the mortality rate after rupture (with abscess formation, 11.4 per cent, with peritonitis, 33.9 per cent).

The death rates for cases presenting abscess and general peritonitis are very high in comparison with the rates reported by many surgeons who have adopted the more conservative methods of treatment. Since this study was made we have been using the conservative or Ochsner¹ treatment for the cases in which we have thought it was indicated, and it will be interesting to make a comparison of the death rates at a later date.

¹ Ochsner, Alton. The Conservative Treatment of Appendiceal Peritonitis. New Orleans M. & S. J. 87: 32-39 (July) 1934.

Scientific Prognosticators—It is an all too common practice of scientific publicists and prognosticators to give free vent to their imaginations in a most unscientific way by picturing our descendants as flying through interplanetary space or brushing old age by administration of glandular extracts. No doubt many of the past triumphs of science were relatively to the times as spectacular and even more unexpected than these would be. However scientific progress is not a great leap of imagination but a steady process, like the advance of a great army at times strategic positions are captured, as when the positive electron (positron) was discovered at times there is a steady mopping up process all along the line as when the systematic search for chemical isotopes followed the first discovery at times there is retreat, as when a theory is proved untenable at times a new powerful engine of this scientific war is invented like the radio tube amplifier. While the scientific campaign is generally well planned in advance and directed toward certain main objectives, it is also on occasion opportunistic in that its center of activity may be quickly shifted by some new discovery or idea which discloses new territories to be conquered—Compton, Karl T., President Massachusetts Institute of Technology. What's Next in Science? *Ital. Spec.* 2: 250 (Jan. 27) 1936.

THE PROBLEM OF NERVOUS AND
MENTAL SEQUELAE IN CARBON
MONOXIDE POISONING

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In seeking information concerning the incidence and characteristics of nervous and mental sequelae following carbon monoxide poisoning, one is aided only in a limited way by the literature. It is true that there is virtual agreement as to the pathogenesis of the lesions in the brain following fatal acute carbon monoxide poisoning. As Haldane¹ points out, degenerative changes are caused by anoxemia of the brain as the result of the fact that much of the circulating hemoglobin is combined with carbon monoxide to the exclusion of oxygen. Throughout the brain there are areas of perivascular and perineuronal edema with varying amounts of nerve cell degeneration together with small hemorrhages due to diapedesis of red blood cells. The changes apparently are most marked in the corpus striatum and cortex. These pathologic changes, however, describe cases of fatal poisoning. In contrast, almost no information is available concerning the pathologic changes in human cases in which the acute stages of carbon monoxide asphyxia are survived.

With regard to the actual incidence of permanent after-effects in carbon monoxide poisoning, unanimity of opinion is not found. The more comprehensive monographs on the subject² usually present conclusions drawn from cases reported in the literature rather than from cases actually seen by the authors.

Glaister and Logan,² twenty years ago, made sweeping statements of severe nervous and mental sequelae following acute or chronic carbon monoxide exposure. Sayers and Davenport³ in 1930 cited from the literature cases showing after-effects. Certainly a considerable number of cases of sequelae in carbon monoxide poisoning are not in the possession of any one observer or at least, if so, have not been reported. Rossiter,⁴ during nineteen years' experience as company surgeon for the Carnegie Steel Company, observed 2,000 cases of carbon monoxide poisoning, which he reported in 1928. Only four patients had any after-effects beyond a few days of transient headache and weakness. In three of these four cases complete recovery occurred within two weeks. One patient, he reported, had a permanent psychosis. He felt sure that except in rare instances a patient, if not dead when found, can be resuscitated and will suffer only a few days of transient after-effects.

Our purpose in this paper is to contribute to an understanding of the incidence and characteristics of

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Cooperation was extended to the authors by the following members of the directing staffs of the hospitals visited: R. E. Blasdel, M.D., Daxot, Corcoran, M.D., Ralph P. Folsom, M.D., H. B. Lang, M.D., Willis F. Merriman, M.D., George W. Miller, M.D., Charles S. Parker, M.D., and William J. Tiffany, M.D. Many others helped in the course of this investigation.

¹ Haldane, J. S. The Relation of the Action of Carbonic Oxide to Oxygen Tension. *J. Physiol.* 18: 201-217, 1895.

² Glaister, J., and Logan, D. D. Gas Poisoning in Mining and Other Industries. New York: William Wood & Co., 1914. Lewin, I. Die Kohlenoxydvergiftung. Berlin: Julius Springer, 1920. Hamilton, Alice. Industrial Poisons in the United States. New York: Macmillan Company, 1929. Sayers, R. R., and Davenport, S. J. Review of Carbon Monoxide Poisoning. U. S. Pub. Health Bull. 193: 1930.

³ Rossiter, F. S. Carbon Monoxide Gas Poisoning. Pittsburgh: Carnegie Steel Company, 1928.

after-effects of carbon monoxide poisoning. It is obviously important to any practitioner to know something about the prognosis of a patient acutely poisoned with carbon monoxide. What are the chances that he will escape serious after-effects, such as psychoses or paralyses? In addition, the entire question of the sequelae of acute carbon monoxide poisoning is a serious medico-legal problem at the present time.

TECHNIC OF INVESTIGATION

An investigation of the after-effects in cases of acute poisoning presents certain inherent difficulties. Serious after-effects are exceptions rather than the rule. The commonly experienced headache and weakness pass off in two or three days. In certain instances, however, serious manifestations do appear, either immediately or a few days after the accident. In order to uncover any considerable number of the latter cases it is necessary to have data on many thousands of cases of acute poisoning. We have such a collection of records covering the accidents occurring in the metropolitan area of New York City for a ten-year period. This collection is unique and probably cannot be duplicated elsewhere.

TABLE 1—Carbon Monoxide Calls Made by Emergency Squads of Various Gas Companies in Metropolitan New York Area

Year	Counties of New York Bronx, Queens and Westchester		County of Kings		Total
	Resuscitated	Dead	Resuscitated	Dead	
1925	*	*	444	209	653
1926	1,059	444	554	261	2,298
1927	872	398	473	291	2,034
1928	968	461	553	254	2,236
1929	1,106	545	645	269	2,565
1930	1,058	496	490	218	2,242
1931	989	494	795	289	2,567
1932	1,064	463	659	297	2,483
1933	892	408	613	239	2,152
1934	964	387	414†	148†	1,913
Total	8,932	4,096	5,640	2,475	21,143

* No figures available

† Returns incomplete

The New York metropolitan area is preeminently suited for this undertaking. Table 1, covering the ten-year period from 1925 to 1935, shows the number of calls made by the emergency crews of the gas producing companies of New York. Each of these calls indicates a carbon monoxide exposure.

In order to locate the cases showing mental and nervous sequelae, a search was made through the records of the seven state institutions that serve the New York City area. Records of forty-three cases were found in these seven hospitals. Each case represented unquestionably the after-effects of acute carbon monoxide poisoning. Of these patients, thirty-nine were poisoned during the ten-year period 1925-1935, while four were poisoned either before or after this ten-year period. In the same period there were more than 21,000 carbon monoxide exposures in the same area. Furthermore, there were more than 80,000 admissions to mental institutions drawing patients from this area. Of these 80,000 patients only thirty-nine owed their psychoses and neurologic signs to carbon monoxide poisoning. It is immediately apparent that nervous and mental sequelae sufficient to hospitalize a patient do not commonly follow carbon monoxide asphyxia.

Before presenting the results of the investigative work, it is well to describe the usual way in which cases of carbon monoxide poisoning are handled in the metropolitan area of New York City. The person, most often one attempting suicide, is discovered by

friends or neighbors, who notify the police and ambulance service. These calls are relayed immediately to the maintenance stations of the emergency squads of the gas companies of the area, which maintain crews that are highly trained in resuscitation measures and are provided with approved inhalation apparatus. They respond to all calls arising from gas leaks, fires, and the like, and arrive at the scene with the fire companies and police. Emergency treatment is immediately started, consisting, in brief, of prone pressure artificial respiration and inhalation of 93 per cent oxygen and 7 per cent carbon dioxide, and is continued until the case is disposed of by the ambulance surgeon. The more serious cases are usually removed to a hospital for a few days' observation. Should the patient show any signs of a toxic psychosis on recovery from the acute poisoning he is transferred to a psychiatric ward for diagnosis. If the psychosis is persistent, he is transferred by court order to one of the state mental institutions for further treatment. Here an examination includes a complete history of the type advocated by all first class teaching hospitals. Any laboratory investigation may be ordered by the attending physician. The physical examination is complete. Whenever indicated, special examinations, such as neurologic, gynecologic or ophthalmologic, are carried out by visiting consultants. Throughout the stay in the hospital, progress notes by the attending physicians appear on the hospital record. In addition, the complete minutes of the discussions of the patient before the staff conferences are included. When the patient is at home on parole, in the care of a friend or relative he is seen in the outpatient department. If he remains well he is discharged from the hospital service in about one year. In the case of deaths, no autopsies sufficiently complete to be included in this study were reported.

INVESTIGATIVE RESULTS

Records were studied in seven state mental hospitals near New York City: Brooklyn State Hospital, including Creedmore State Hospital, Manhattan State Hospital, Hudson River State Hospital, Central Islip State Hospital, Kings Park State Hospital, Rockland State Hospital and Pilgrim State Hospital. These hospitals were chosen because practically every admission of persons for mental illness in the metropolitan area of New York occurs in one of this group. Through the cooperation of the officers of the various institutions named, every record with the diagnosis of "psychosis due to drugs and other exogenous toxins (carbon monoxide or illuminating gas)" was examined. In one institution every record of patients in the hospital on that day was reviewed for even a mention of "gassing" at some time in the life of the patient. This undertaking meant that some 6,000 records were reviewed, each physician in charge of a unit in the institution being made responsible to uncover the mention of gassing among the records of the patients in his charge. By this means from the 6,000 cases in the hospital on that day twenty-four were sifted out. Each of these case records was reread by one of us. In each of them the gas exposure—usually a suicidal attempt with the patient simply snatching at the stove in order to turn on the gas—had absolutely nothing to do with the psychosis. The psychoses in these patients varied and antedated the gas exposure in every instance. As a result of this examination of the records of patients in one of the hospitals we have felt very confident that all cases pertinent to our study could be uncovered by the diagnosis index of the various institutions.

INCIDENCE OF SEQUELAE AFTER CARBON
MONOXIDE POISONING

In table 2 the admissions by fiscal years of six of the seven mental hospitals are tabulated. Admissions to Pilgrim State Hospital are omitted because the patients are usually received from other mental hospitals. All transfers in the case of Rockland State Hospital are likewise excluded. In these hospitals, drawing from the metropolitan area of New York City, there were 81,659 admissions in the ten-year period of 1925 to 1935. Included in this number were thirty-nine cases of psychoses due to carbon monoxide poisoning. (An additional group of four cases, in which poisoning occurred either before or after the ten-year period, is not included in these tabulations concerning the incidence of sequelae.) The ratio of carbon monoxide psychoses to all other psychoses gives the incidence percentage of 0.05 per cent, or roughly one carbon monoxide case to 2,000 other psychoses.

The incidence of sequelae of carbon monoxide poisoning in relation to the total number of acute cases has been computed. During the same ten-year period approximately 21,000 poisonings occurred. Among these, thirty-nine cases of carbon monoxide sequelae appeared. From these facts it appears that one case in 500 acute exposures later showed nervous or mental symptoms. One third of the 21,000 patients could not be resuscitated. Such a low incidence of sequelae and such a high incidence of fatal cases indicate that persons are apt to succumb to the acute poisoning or recover completely.

CLINICAL CHARACTERISTICS OF THE NERVOUS
AND MENTAL SEQUELAE FOLLOWING
CARBON MONOXIDE ASPHYXIA

The entire forty-three cases of nervous and mental sequelae can be examined in order to draw a composite picture of the clinical syndrome. The symptoms are those that have followed acute carbon monoxide poisoning after the usual transient effects have disappeared. This complex is entirely different from so-called chronic carbon monoxide poisoning caused by the inhalation of a low percentage of gas over a prolonged period of time. During this investigation no cases of nervous or mental sequelae were found to follow such "chronic" and mild exposure. All the patients in our series were affected sufficiently to require admission to mental hospitals.

Age of Patients—The average age of the forty-three patients was 53 years. The youngest was 20 and the oldest 83. The eleven patients dying within two years following poisoning were on an average 61 years of age. The average age of those surviving a two-year period was 50 years. Complications such as bronchopneumonia occur more frequently in the older group.

Sex of Patients—Of the total of forty-three cases, twenty-seven were men and sixteen were women.

Nationality of Patients—Among these patients there were eleven Americans, seven Irish, five Germans, five Jews, two Austrians, two Italians, two Bohemians, two Negroes, two Chinese, and one Norwegian, one Finnlander, one Greek, one Dane and one Swede.

Past History—Of the forty-three patients, nine were alcoholic, while eleven indulged in alcohol moderately. Twenty-two were total abstainers. No information was available with regard to one patient. Acute alcoholism, of course was often the direct cause of the overwhelming exposure of the patient at the time of the acute poisoning. Otherwise, alcohol played no contributory

part in after-effects of carbon monoxide asphyxia. In other regards the past histories of the patients were not enlightening.

The Degree of Acute Poisoning Necessary to Cause Sequelae—It is now generally agreed that carbon monoxide is rapidly expired from the body as soon as the person is removed from the poisonous atmosphere. The assumption is fair that damage to body tissues which can produce any after-effects occurs during the period of acute asphyxia. Irreversible changes must be produced during this period. All the patients in this series were unconscious when discovered. By itself, this is strong evidence that a deep intoxication precedes any after-effects. Often the poisoning occurred under the most unfavorable situations, such as suicidal attempts, alcoholic intoxication, and in sleep. These situations favor deep intoxication with carbon monoxide gas. The impression that a period of unconsciousness from a large dose of carbon monoxide gas characterizes the acute poisoning in all instances in which after-effects are sufficiently serious to bring the patient to a mental hospital is substantiated by remarks appearing on the hospital records, such as "unconscious

TABLE 2—Total Admissions in Ten Year Period in Mental Hospitals Serving New York Metropolitan Area, Including Psychoses Due to Carbon Monoxide Intoxication

Fiscal Year	State Hospitals						Carbon Monoxide Cases
	Manhattan	Brooklyn	Hudson River	Central Islip	Kings Park	Rockland	
1925	2,529	1,043	717	1,221	1,271		6,831
1926	2,921	1,274	733	1,324	1,078		6,710
1927	2,363	1,406	734	1,067	1,119		7,289
1928	2,317	1,599	788	2,020	1,247		7,931
1929	2,997	1,523	819	2,005	1,107		7,451
1930	2,317	1,679	841	2,017	1,102		8,106
1931	2,223	1,606	907	2,110	1,150		8,017
1932	2,365	1,543	879	2,027	1,290	79*	8,842
1933	2,004	1,917	721	2,261	1,063	1,437	10,023
1934	2,331	1,895	634	1,933	1,551	1,512*	10,116
Total	23,160	15,365	7,783	18,745	12,718	3,825	81,659

* Exclusive of transfers.

two days," "unconscious four days," "for several days lapsed off into semiconsciousness," and "resuscitated after eight hours."

The records of twenty-two of the forty-three patients who were resuscitated by the emergency crews of the gas companies serving metropolitan New York have been available to us and provide reliable information concerning the episode of acute poisoning.

Every one of the twenty-two patients was unconscious when first discovered and fourteen were in the deepest coma from the gas inhaled. The experienced observer would realize that these fourteen patients were in the most desperate condition and a few more minutes' exposure would have caused a fatal issue. They presented the following "in extremis" condition: complete unconsciousness, with a slow or irregular pulse and with a slow gasping respiratory rate. Often artificial respiration, in addition to oxygen-carbon dioxide inhalation, had to be resorted to during the treatment. The eight other cases showed a clinical picture of less severe acute carbon monoxide poisoning. In these the patients were unconscious when discovered, but the other signs were less disturbing. The pulse was moderately elevated and the respirations were about the normal rate.

Further information concerning the degree of acute poisoning necessary to cause after-effects can be secured by examining the length of time required by the emergency squads to establish sustained normal breathing.

in the patients. By simply adding up the number of minutes of prone pressure, inhalator treatment, or both, in each case, the figure of sixty-six minutes per patient in our series was secured. On the individual cases the time varied from a low of twenty-five minutes to a high of 195 minutes. These figures may be compared with the time of resuscitation in fifty cases treated by the emergency crews picked at random over the last five years. This average was thirty-four minutes. The longest treatment in these cases was 145 minutes and the least was twenty minutes.

Onset of Sequelae of Carbon Monoxide Poisoning—The great majority of patients who are brought into hospitals after emergency resuscitation are entirely conscious. They experience several days of unpleasant but entirely transient effects. These symptoms consist of headache, dizziness and, perhaps, gastric distress with nausea. It has been quite conclusively demonstrated by Forbes, Cobb and Fremont-Smith⁴ that these symptoms are due to cerebral edema induced by the poisoning. Such cases show no serious after-effects.

In our forty-three cases there is reliable information concerning the first week following the acute poisoning in all but eleven.

The exact time of the onset of symptoms of nervous and mental sequelae in carbon monoxide poisoning is variable. Two classes are seen: (1) those cases with the onset of symptoms within one week and (2) those cases with the onset of symptoms after a clear period of from one to three weeks. In the total of forty-three patients, nineteen suffered after-effects within the first week while thirteen experienced a clear period. In eleven instances insufficient data were available for analysis.

The cases that showed symptoms within the first week usually had no clear period. The group of nineteen included most of the patients so severely poisoned that their unconsciousness lasted several days. On recovering from the comatose state they passed immediately into a confused and disoriented state. Furthermore, neurologic signs were occasionally detectable.

Case 1 illustrates the immediate onset of after-effects of carbon monoxide poisoning following the acute episode.

A week or more of mental clarity following acute poisoning is an interesting phenomenon. This group of thirteen cases may be sharply differentiated from the group just discussed. The patients recovered completely after the acute episode. Many were discharged from the hospital and some even returned to their jobs. There was an abrupt onset of secondary symptoms on about the tenth day. Cases 2 and 3 are illustrative. The longest period of clarity was nineteen days. In two instances there was a sudden onset of symptoms suggesting intracranial accident, in both there was collapse with focal muscular paralysis. These accidents were serious and caused permanent paralysis or death.

THE TYPICAL PSYCHOSIS FOLLOWING CARBON MONOXIDE POISONING

A psychosis, most usually temporary in character, was the most common manifestation of the after-effects of carbon monoxide poisoning. In every instance the psychosis was quite similar. It was marked by confusion and bewilderment, combined with a loss of memory. The events occurring at the time of the accident were forgotten. Such symptoms as hallucinations

and delusions were conspicuously absent. At times there was overactivity of short duration. The entire psychosis was brief. Improvement was usually noted by three months after the accident. Indeed, improvement was observed in some cases within a few weeks. In some, improvement was not seen for six or eight months. It is quite evident that the psychosis assumed its most severe form at the onset. The patient rapidly sank to the level of a vegetative existence, incontinent, untidy, unresponsive and unable to carry out any voluntary acts. From this state he often improved within a few weeks, so that he was walking about the ward. Disorientation and confusion would disappear before the memory defects. The latter were the last to clear and sometimes months or years passed before the events immediately surrounding the accident could be recalled. Within a year most of the patients were sufficiently improved so that they could be paroled home.

Amnesia in some form was the most regular feature of the psychosis following carbon monoxide poisoning. Usually, as already noted, it consisted of memory defects.

One case showed an auditory aphasia. In the literature deafness is often mentioned as a sequel of carbon monoxide poisoning. In this instance the deafness was actually an auditory aphasia and not a primary nerve injury. There was also an accompanying motor aphasia that cleared in a week's time.

Neurologic Changes in Carbon Monoxide Poisoning—The forty-three cases showed a fairly high incidence of neurologic changes in varying degrees of severity. The least apparent lesion—if it deserves the title—was marked by increased reflexes alone. From these minimal symptoms the cases graded upward to well advanced parkinsonism, with increased reflexes, slow movement, lack of coordination, fixed facies and scanning speech. We have encountered occasional hemiplegias and paraplegias.

In addition to these changes denoting muscular hypertonia, and indicating basal ganglion lesions, muscle atrophies and skin hyperesthesias were found.

The neurologic lesions appeared early in the course of the disease, along with mental manifestations. The neurologic picture showed steady improvement, leading often to complete recovery from within a few days to several years, depending on the degree of the lesions. Usually the cases showing only increased reflexes cleared within a few weeks. Six of the forty-three cases, however, showed permanent neurologic residua. In five instances these permanent effects consisted in parkinsonism and in one instance simply increased reflexes. Ten patients died early in the course of the disease, because of a combination of the gas poisoning and senility resulting in terminal bronchopneumonia. It is difficult to analyze the degree of neurologic damage in these patients because of the comatose, moribund condition. Definite neurologic signs were demonstrated in three of these cases.

Omitting patients who died, twenty-three showed neurologic signs, six of whom did not fully recover and seventeen of whom recovered completely (table 3). Case 4 illustrates marked neurologic lesions.

End Results in Carbon Monoxide Poisoning—For clarity the forty-three patients are divided into "dead," "recovered" and "permanently affected." The two year period following the individual's exposure to carbon monoxide is arbitrarily designated as the period beyond which signs and symptoms are considered permanent. Of the forty-three patients, twenty-three recovered

⁴ Forbes H S, Cobb Stanley and Fremont Smith Frank. Cerebral Edema and Headache Following Carbon Monoxide Asphyxia. Arch Neurol & Psychiat 2: 264 (March) 1924.

eleven died, and nine suffered permanent effects. In evaluating the final results in these cases it has been necessary to rely entirely on hospital records. The criteria of complete recovery has been the hospital note of discharged as "recovered." In each case there was a year's follow up, and notes made by physicians from the hospital gave a good indication of the adjustment that the patient made after leaving the hospital.

Eleven of the patients died within two years of the date of the acute poisoning. A glance at the first ten in table 4 shows that they all died within three months of the acute poisoning. In all but two of these deaths

TABLE 3—Incidence and Type of Neurologic Lesions Occurring Following Carbon Monoxide Poisoning

1	Number of cases showing muscular hypertonia (increased reflexes perhaps clonus and positive Babinski) (1 shows signs after 2 yrs)	9
2	Number of cases showing hypertonia and some degree of peripheral neuritis (2 permanently)	3
3	Number of cases showing parkinsonism (3 permanently)	4
4	Number of cases showing parkinsonism and some degree of peripheral neuritis	1
5	Number of cases showing only peripheral neuritis	10
6	Number of cases showing no neurologic signs	3
7	Number of patients dying before complete neurologic examination	10
Total		43

was attributed to bronchopneumonia or senility. Two of the patients, 2 and 6 in the table, died from primary brain tissue destruction.

The last and eleventh case on the list was very unusual. A man, aged 39 approximately six months after carbon monoxide poisoning presented little data as to his health other than that he had been in a private sanatorium. On admission to the state mental hospital he was found to have marked neurologic signs as well as a psychosis. He was completely incapacitated. A blood examination showed a picture of primary anemia. In spite of temporary improvement on liver therapy he continued to be very weak and died sixteen months after the poisoning.

Twenty-three of the cases were paroled or discharged without, apparently, any permanent scars of poisoning.

Of the total forty-three cases, nine fell into the group of permanent sequelae. Five of these nine patients suffered from neurologic complications. This consisted of a modified parkinsonism, with stiffness of extremities due to muscular hypertonia. Three of the patients suffered from psychoses, one of which was an auditory aphasia. The ninth case showed both neurologic and mental lesions.

Prognosis in Carbon Monoxide Poisoning—This investigation covering the after-effects in 21,000 cases of acute carbon monoxide poisoning leads one to believe that the prognosis as to sequelae is not alarming. We found only forty-three patients who suffered enough after-effects to be admitted to mental institutions.

Furthermore, if a patient does fall into the small group of cases that show sequelae, he still stands a good chance of complete recovery within two years. It is usual that nervous tissue damage is maximum at the time of the destruction. From then on regeneration takes place, unless the pathologic process continues. Hence, in cases of carbon monoxide nervous and mental disabilities, hope of improvement should be entertained. After a two year period the condition is most likely to be static.

GENERAL SUMMARY

The New York metropolitan area was chosen for a study of nervous and mental sequelae of carbon monoxide poisoning. It is known that at least 21,143

acute exposures of all degree occurred there in a ten year period. For the same period a survey of the state mental institutions serving the metropolitan area of New York City showed thirty-nine certain cases of sequelae of carbon monoxide. Such patients formed 0.05 per cent of the total admissions. Serious mental or nervous sequelae of carbon monoxide poisoning are thus infrequent in relation either to other nervous and mental diseases or to the number of acute exposures.

Study of case records revealed that when nervous or mental damage occurred the acute carbon monoxide intoxication was extreme. Complete unconsciousness was invariable and the most active resuscitative measures were necessary. None of these cases followed so-called chronic carbon monoxide exposure over a long period of time.

A clear period of from seven to twenty days preceded the onset of symptoms in one third of the cases. In the remainder of the cases the symptoms started immediately following the poisoning.

Mental sequelae consisted of a confusion psychosis, with disorientation, lack of judgment and amnesia. Motor overactivity and aphasia were much less common. Hallucinations, delusions or convulsions played no conspicuous part.

Nervous sequelae consisted of signs varying from slightly increased deep reflexes to well advanced parkinsonism. Sensory disturbances, such as skin anesthesia and peripheral motor neuritis, were also encountered. These cases all showed improvement, but the final result depended on the degree of initial damage.

In the total group of forty-three cases, twenty-three patients recovered completely, nine suffered permanent nervous or mental sequelae and eleven died.

ABSTRACT OF CASES

CASE 1—Showing immediate onset of sequelae. A man, aged 69, single, a German waiter, with no history of alcohol or drugs, had had no occupation for three years because of general weakness and senility.

TABLE 4—Analysis of Cause of Death in All Patients Dying Within Two Years of the Acute Poisoning

Patient	Age	Duration of Illness, Days	Cause of Death
1	40	1	Bronchopneumonia
2	56	12	Lapsed into coma
3	76	70	Gradually sank
4	69	42	Pneumonia cardiac decompensation
5	60	72	Death followed hip fracture
6	62	40	Convulsions
7	83	71	No comment
8	39	41	Bronchopneumonia
9	40	33	Bronchopneumonia
10	83	43	Bronchopneumonia
11	1	197	Fernileous anemia

The patient is believed to have attempted suicide because of "pain." He was found in a gas filled room unconscious, with a pulse of 100, and respiration rate of 12 per minute. He was revived after considerable effort. It was necessary to institute artificial respiration in addition to thirty minutes of inhalator treatment (oxygen 95 per cent and carbon dioxide 5 per cent for twenty minutes, 90 per cent oxygen and 10 per cent carbon dioxide for ten minutes). He was removed to Bellevue Hospital where he was immediately seen to be confused, disoriented and mentally incapacitated.

On the nineteenth day he was admitted to the Manhattan State Hospital from Bellevue Hospital. On admission the patient was semie emaciated and bedridden. He was mentally confused, with no judgment. The blood pressure was 115 systolic, 75 diastolic. The heart sounds were noted as faint. The reflexes were normal. Urinalysis showed a specific gravity of 1.017, albumin 1 plus, and an occasional red blood cell in the sediment. The Wassermann reaction was negative.

On the forty-second day the patient died of bronchopneumonia and cardiac decompensation.

The diagnosis was psychosis due to drugs or other exogenous toxins (illuminating gas) and confusion.

CASE 2—Showing onset of symptoms after a "clear" period A man, aged 37, Irish, separated from his wife, had a history of habitual use of alcohol, otherwise his past history was irrelevant.

While intoxicated the patient and his brother were overcome by escaping gas. When discovered the patient was unconscious, pulse irregular and the respiration rate 6 per minute. Oxygen 95 per cent and carbon dioxide 5 per cent were administered by an inhalator for one hour. He was removed to City Island Hospital, where he is reported to have been unconscious for two days. For the remainder of the first week he apparently had a "clear" period and seemed to be entirely recovered.

On the seventh day the patient began to "act queerly." He was transferred to Bellevue Hospital. Mentally he was unresponsive. A right positive Babinski sign was noted.

On the forty-second day he was admitted to the Manhattan State Hospital from Bellevue Hospital. On admission he was comatose. Only a partial physical examination was carried out. Mentally he was dull, apathetic and completely disoriented.

On the eighty-fourth day his condition was improved. He was out of bed, wandering about the ward.

On the 133d day he was almost fully recovered. Memory and orientation were good.

On the 166th day he left the hospital on parole.

On the 265th day he was "as well as ever."

On the 584th day he had a complete discharge from the hospital as recovered.

The diagnosis was psychosis due to drugs or other exogenous toxins (illuminating gas) and confusion.

CASE 3—Showing a "clear" period A woman, aged 51, a Danish housewife, did not have a contributory past history. She was found unconscious from illuminating gas exposure and removed to the hospital, where she remained unconscious for from forty to fifty hours. After five days she was discharged from the hospital, apparently entirely recovered from the gas poisoning, except for a little weakness. In two weeks, however, her gait became unsteady and her mental state changed from clarity to confusion and bewilderment. She was admitted to another hospital for observation. There it was found that she was mentally confused.

On the fifty-second day she was transferred to the Hudson River State Hospital. On physical examination on admission no remarkable changes were noted except on the neurologic side. In this respect there was a noticeable blank expressionless appearance to the face. The knee jerks were increased. There was a coarse tremor of the hands. Skin sensitivity to touch, cold and heat was diminished over the entire body. Mentally the patient was abnormal. She was anxious and disoriented. There were no hallucinations or delusions. Urinalysis showed a specific gravity of 1.021, a faint trace of albumin and no sugar, and the sediment was clear. The Wassermann reaction was negative.

On the fifty-ninth day the progress note said that the patient had cleared mentally so that she was well oriented and more interested. She complained of vague pains over the body.

On the ninety-fourth day the progress note said that the patient felt that she was thinking more easily. She was mentally clear on examination. On the 116th day all neurologic signs, including the diminished skin sensitivity, had cleared.

On the 123d day the patient was paroled.

On the 266th day the patient reported that she was feeling better every day. She was going to movies and the like.

On the 490th day she got her permanent discharge papers. The diagnosis was psychosis due to drugs or exogenous toxins (illuminating gas) and confusion.

CASE 4—Showing marked neurologic signs with permanent disability A woman, aged 47, a German housewife, with two children, had no history of addiction to drugs or alcohol. She had had menopausal symptoms for one year.

The patient attempted suicide by slashing her wrists and exposing herself to illuminating gas in her apartment. She was discovered unconscious, with a pulse of 115, respiration rate 6 per minute, gasping in character. Her condition was poor. Prone pressure artificial respiration was administered for

five minutes, with oxygen 95 per cent and carbon dioxide 5 per cent. The inhalator was continued for thirty minutes. The patient was then removed to Morrisania Hospital in a semi-comatose condition. On the day following the poisoning she was removed to Bellevue Hospital, mentally confused and disoriented. Her physical condition seemed good.

On the twelfth day she was admitted to the Manhattan State Hospital from Bellevue Hospital. Mentally the patient was restive, at times excited, but generally apathetic and disinterested. She was completely disoriented, with judgment and insight lacking.

On the fiftieth day a note was made of the immobile facies and somewhat rigid gait, with propulsion.

On the seventy-fifth day, parkinsonism continued.

On the 101st day the patient continued to be uninterested mentally, with poor memory. She was confused, although she was somewhat more oriented, knowing the time and the place. Parkinsonian symptoms continued.

On the 135th day there was no change.

On the 142d day she was paroled to the care of relatives at home.

On the 318th day she mentally had no insight. The neurologic signs were masklike facies and right-sided intentional tremor, the knee jerk reflex was increased on the right and diminished on the left. There was loss of associated movements. The right arm was flexed and held closely pressed against the trunk.

On the 511th day she was discharged, much improved. She appears, however, to have permanent neurologic signs of parkinsonism.

The diagnosis was psychosis due to drugs and other exogenous toxins (illuminating gas) and confusion.

55 Shattuck Street

SCABIES AMONG THE WELL-TO-DO

SOME PRINCIPLES ILLUSTRATED BY THE ELITE

JOHN H. STOKES, M.D.

PHILADELPHIA

My office file contains fifty-three cases of scabies among the better feathered, the silver spooned and the intellectual and professional elect. Of the fifty-three, thirty-seven had seen one or more physicians without relief. Eight had seen "grade A" dermatologists. In five of the eight there had been diagnostic errors. To these I myself contributed one. A total of ten correct diagnoses had been made by forty-nine physicians who saw thirty-seven of the patients. To one of them his family physician made the remark "I would have called it scabies myself if it hadn't been I thought that was a disease no nice people ever had." From twenty-one known sources, sixty-one recognized and an unknown number of unrecognized infestations resulted. Though the subject may seem a bit *infra dig* and on a scale of morbidity rather picaresque in a time of war and rumors of war, there is probably some justification for an analysis and commentary on what has been justly designated as at once the easiest and the most difficult diagnosis in dermatology. Scabies is a disease of herding, promiscuity and travel, of family, school and vacation life. It is thus, of course, like the louse infestation, a plague of armies, tenements and slums. It may with equal force invade a pedigreed school, Camp Wawa Wawa, or the baronial castle on the hill. It may appear in the role of venereal disease capable of being transmitted by bedding with the *fille de joie* and is too often at the site of the penile burrow, the doorman to *Spirochaeta pallida*. The late war, the current human migrations south in winter and north

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in summer, the fluidity of present-day populations, all contribute to making scabies an ever present differential consideration, wholly without social boundaries, the possible explanation of the itches of the tycoon, the socialite and the university professor equally with the mechanic's daughter on relief

Reviewing the outstanding facts of the group of cases thus introduced, it appears that persons of wealth and culture, intellectuals, business and professional men and women and adult members of their families made up two thirds, college and finishing school students, teachers, secretaries, clerks and young children the remainder of my series. A fourth of the cases were recognized within a month, two thirds within three months, two had run more than a year. A case not here included was an offshoot, at a thousand miles distance and a year's standing, of an epidemic involving an entire Florida town, in which the situation had been generally explained as being the result of food poisoning from a carload of spoiled milk chocolate. The victim I encountered was an elderly man, the proprietor of a pair of season hotels of fair standing at opposite ends of the country. I examined him, all unsuspecting, following his frantic appeal in my bedroom at the summer cottage I was visiting. Fortunately nothing happened, though his clothing was scattered over my bed. Of those infestations in this series whose source could be traced, seventeen occurred within the family, ten were incident to travel, six occurred as visitor or visited, two were sexual contacts. Hotels figured three times, one of them a princely hostelry, a swank private hunting lodge was incriminated once, steamers twice, vacations four times. The housekeeper of the hunting lodge had entertained a niece, who had slept for a time in one of the twin beds in the master bedroom. The mistress acquired the infestation, was given glycerophosphates for "nerves" by her internist, told it was gallbladder and change of life by her friends, received calamine lotion by telephone order from me (I plead that I had never seen her, she would not come in, I could not disregard the request, I'll never do it again!) and was thought to have dyshidrosis by another medical adviser. Her husband was found to have a full-blown infestation, classic as to lesions, but whose subjective symptoms he had been too much preoccupied to take seriously. The pet steamship story is of a sportsman visiting in Europe who was informed by his dermatologist abroad that he was suffering from a recurrence of his secondary syphilis (possibly because of his conspicuous urticarial sensitization reaction and the infiltration of the scratch papules). Instead of beginning the recommended course of bismuth he flew for the then record-holding transatlantic liner and burst wildly into my office on the sixth day, a veritable visiting card for the acarus of scabies, which must have distributed his and its compliments broadcast en route. There had been no recurrence of his syphilis, and two weeks accomplished his cure.

THE DIAGNOSIS OF SCABIES

In understanding why the diagnosis of scabies fails, it is clear from this series that the following items are of importance: (1) a low index of suspicion—partly a misuse of social criteria, (2) unfamiliarity with the typical scabetic symptom syndrome, (3) failure to see or recognize the burrow without the use of the lens, (4) failure to distinguish between scabies and its complications and sequelae—i.e., to recognize the underly-

ing trouble, (5) failure to hunt up the contacts for confirmation or illumination, (6) misinterpretation or mishandling of a therapeutic test.

Of thirty-three erroneous diagnoses inferred from course or treatment or known to have been made before the patient's first visit to me, the commonest (and in equal proportions) were "nerves" (the scabetic neurosis), "hives" (the postscabetic or sensitization urticarial reaction), "dermatitis" (scratch plus pyogenic infection) and "physician's quandary," indicated by nondescript internal treatment, including diet, laxatives, antacids (for "acidity") and so on. The full list brings out in addition, as serious contestants, lichen urticatus (chronic papular urticaria of adults), dermatophytosis of the hands with dermatophytid of the body, dermatitis venenata (ivy, primrose), impetigo and pyogenic eczema, and furunculosis. The body and pubic louse infestations must also be included. On these various possibilities the best diagnostic acumen may go astray.

When the diagnosis was finally made, it was found to rest on four observations, in order of importance as follows:

- 1 The burrow, especially on the hands and on the penis
- 2 Nocturnal itching
- 3 Distribution of the eruption
- 4 The identified contact or source

One sign alone made the diagnosis four times, two signs, twenty-one times, three signs nine times, four and five signs six times each, ten cases were rated as "classic," with "everything there" including recognized sequelae.

In order to identify scabies in a doubtful case it is necessary to strip the patient completely. One may find the diagnostic burrow on the instep, especially in infants. Only by having the patient undress completely can one study the geography of the situation and recognize the "map" or distribution of scabies. One must expect of course to see scratch, and in complicated or long-standing cases it may be general. But there is nearly always a concentration of the process, whether scratch or complicating urticarial, pyogenic or eczematoid eruption, about the fingerwebs and wrists, the axillary folds, the nipples (sometimes the chief or only site in women), the belt line and the genitalia. At least two and usually three or more of these regions are involved. As in identifying a faint macular syphilid, one should not stand too close, for distance tends to bring the distribution of the eruption into focus, so to speak. In persons who resist the infestation or whose skins show little general reaction to it, a concentration of urticarial and scratch papules on the buttocks along the anal cleft may arouse suspicion. Nothing is more suggestive of scabies than irregularly shaped dry or scratched papules on the shaft, foreskin and glans of the penis, or the anterior surface of the scrotum, nor can this suspicion be laid to rest by finding the patient to have a positive Wassermann reaction.

The preliminary survey for distribution accomplished, the next step is a search for burrows. Select a thin-skinned region and with a biconvex lens of two diameters or a loupe of up to five diameters magnification inspect the papules for doublets and their connecting burrow, the zigzagness of which varies with their distance apart. At one minuscule mound the *Acarus* enters, and in its top usually is found the yellowish brown ring or pinhead dung heap, quite different when intact from the darker red clot or crust of a scratch papule. At the point finally reached by the adult

female or just short of it the second papule, in reality usually a deep vesicle with a slight pearly translucence, develops. The dung heap is smaller, the vesicular dugout larger. The tunnel in which the eggs are laid joins the two with a directness and purposefulness that perhaps varies with the temperament of the lady and the toughness of the skin. I have seen mild zigzags an inch long on the thin skin of the inner side of the upper arm and dumb-bell-like configurations with a 2 mm straight central bar in the tough skin of the palm. In the more recent burrows, scratch mutilation is less likely and there is more urticarial edema, elevating both papules and burrow. In the older lesions, untraumatized the dung heap papule and burrow are almost flat and recognized chiefly by the pigmented excrement while the dugout retains its edema and translucence for a longer time.

In general it is an unnecessary refinement to attempt to dig out the squatter tenant of the establishment or to shave off tissue to demonstrate the eggs microscopically though both are impressive classroom procedures. To rip up the vesicopapule and the skin just beyond it with a common pin and examine the clinging white speck under low power may occasionally help in a doubtful case but I have not found it necessary in years. In his enthusiasm, the doctor should not show his find to the patient (see acarophobia).

It cannot moreover, be too emphatically stated that the failure to use a lens hamstrings the diagnosis by papule and burrow hunting at the start. This, if I am not mistaken is the chief source of failure in many seemingly typical cases. Stopped examination and lens search are essentials.

It is not wise to make diagnoses on one papule or on either a straight or a zigzag burrow-like streak, minus one or other of the pair, either dugout or dung-hill for scratch can produce deceptive variations. Whether one burrow with its twin papules can make a diagnosis depends on the experience of the diagnostician. In only four cases did I venture this. Certainly the burrow group is the only lesion on which a diagnosis *solo* may be ventured.

The itching of scabies is surprisingly consistent in its nocturnal character, at least early in the siege. Very late, when acarophobia, sulfur dermatitis, postscabetic urticaria and bath pruritus have all complicated the situation it is more difficult to recognize, but most patients can, even after four months of infestation, testify to the storm of itching that accompanies supposedly the nocturnal parade of the mites in search or excavation of newer and better, or of independent, habitations. Occasional patients do not itch at all, probably because the threshold of itch sensitiveness is like that of pain and varies greatly in individuals. The patient may complain of itching on undressing, or later when becoming warm in bed, the latter, in my observation, much the more distinctive.

Finding a confirmatory human source or contact with scabies in a given case assumes the diagnostic importance still attached by the French to the ritual of confrontation in the diagnosis of chancroid and syphilis. In a doubtful case it is diagnostically important to find a more clear-cut and preferably untreated case from the same source. Therapeutically it is important to ferret out contacts because, through them, untreated, comes relapse. Usually the family provides the best

field for such a search, and infants particularly because of their thin skins and ill directed scratch activities furnish the best fields for the burrow hunt. Distribution in infants, however, is apt to be atypical, because every part of the body including the face and scalp may be affected. Very choice burrows may be found on the sole of the infant foot. A history or an outbreak of impetigo among playmates or in a school room may mask an underlying scabies that will keep going a whole winter, through failure to inspect contacts by a school physician. Comment on the therapeutic test is included under treatment.

THE COMPLICATIONS OF SCABIES

The infection with syphilis of the scabetic patient who has genital lesions, an occurrence of unknown frequency but by no means rare, should always be borne in mind, especially when there have been repeated sexual exposures. Nine burrows transformed into small chancres on a high-priced tobacco buyer's penis by no means touches the limit of this possibility, and darkfield examination of all suspiciously indurated lesions is in order when the circumstances suggest the need for it.

Of all other complications, the following appeared in thirty-three of my fifty-three patients, notwithstanding their good hygiene and better than average intelligence. The sensitization phenomenon postscabetic urticaria developed in nine. Whether due to sensitization to the proteins of the decomposing acari or to their excreta or toxins, there can be no escaping the reality of this disturbance, which begins to appear, at a guess, about a month or six weeks after infestation and is present both during the infestation and for days, weeks or even months after recognizable scabetic lesions have disappeared. The appearance of military hives on the otherwise unaffected skin, the urticarial edema of the scabetic papule and the scratch lesion, and a certain degree of dermatographism all serve to confuse the examiner and to lead even experts to diagnoses of lichen urticatus and food rashes, from which only a painstaking search for burrows and the other distinctive features of a scabetic infestation could save them. The urticarial response is heightened by the nervous reaction to the tormenting itching and loss of sleep, and to the state of mind incident on discovery of the trouble (parasitophobia).

Parasitophobia or acarophobia (seven cases) is a particularly distressing complication of a scabetic infestation, for which physicians themselves may too easily be responsible. The acarophobe can oftenest be identified by his odor, his beset or frantic eye, and his gingerly gestures. In fact, the strong odor of sulfur is *prima facie* evidence either of a phobic misapplication or a badly managed sulfur treatment. The recognition of the dry, chapped or crackly, dusky pink sulfur dermatitis about the folds especially, identifies the trouble. The acarophobe is not necessarily a neurotic, yet his temporary conviction that he is "buggy" may lead to successive unsuccessful "cures" for a nonexistent or previously cured scabies that establishes a vicious mental circle and a round of dermatitic manifestations: lichenification, bath pruritus and dermatographic urticaria, which assumes the proportions of nervous breakdown before the situation is recognized. One grandmother spent \$600 alone in steam and sulfur fumigations of her home, all quite unnecessary, as the result of misdiagnoses and ill considered statements attributed to her physicians, and was finally with diffi-

culty kept out of an asylum herself. In this case the trouble was a senile (*sicc* soap) pruritus in the first place. A priest, reeking with successive sulfurous ablutions, nearly lost his charge before his plight was recognized. The acarophobic neurosis may assume symbolic or fixational characteristics, the focusing point for personal conflicts and problems, and become unbudgeable without prolonged psychiatric attention.

Every precaution should therefore be taken to set the person to whom a diagnosis of parasitic infestation must be communicated on the right track at the start, by a tactful but authoritative delivery, an absolute assurance of cure, a caution against elements of failure in the treatment technic, which may result in itchy complications mistaken for relapses, and in relapses themselves. Once the way is skilfully paved, only the irresistibly predisposed person develops a significant acarophobia. In highly unstable individuals one is tempted to withhold the diagnosis but this at once runs counter to the necessary instructions for treating the clothing and bedding, and the well meant reticence only creates distrust and defeats itself.

Equal in importance with urticaria (nine cases) is the secondary dermatitis which is to some extent the sequel of treatment in sensitive persons and especially in those who repeatedly "cure" with sulfur and other irritant ointments either with or without explicit direction from their physicians. Here again physicians are remiss in the failure to give explicit warnings and instruction and to refuse prescription refills without reexamination to patients whom they treat for scabies. No prescription containing a skin irritant as universally trouble making as sulfur should be issued without restriction. There is, moreover, a very distinct idiosyncratic reaction to sulfur, and I have seen the wife of a tough-skinned man develop a dermatitis from the sulfur he had used on himself to cure an infestation under my supervision before he returned to share their room, and after he had completed his "cure," with its attendant baths. The effort to cure scabies is a constant compromise between the destruction of the acarids and the excitation of irritative dermatitis, which accounts in part for the popularity of the shorter, less irritative "one day" treatment methods.²

A fourth important complication is what I believe amounts almost to a "sensitization" to pyogenic organisms, resulting in bouts of impetiginous dermatitis, sometimes highly refractory to treatment. These may or may not have an "allergic" factor, as in the scabetic urticaria. They seem also to be particularly frequent in those who are free users of carbohydrate, especially sugar, and of alcohol.

The bath complications (bath itch, bath dermatitis) are confused with the sulfur pictures and usually occur in pure form, so to speak, only in ichthyotic persons, whose congenitally dry, greaseless skins resist irritants less effectively than do the seborrheic, who may actually profit by a sulfurous rubdown or two. Liberal greasing and the grease-based preparations are the best antidote for such difficulties, and preferable thus to the solutions which leave a thin film of sulfur on a drying skin.

It is possible for the clearing up of an extensive scabies to leave an uncovered dermatologic picture ranging from a secondary syphilid to psoriasis or dermatitis herpetiformis. Into this last-mentioned fash-

ionable catch basket of dermatologic classification more than one parasitic infestation would be thrown, were Duhring's disease more familiar to practitioners at large.

TREATMENT OF SCABIES

The treatment of the patients under consideration here was by a uniform and rather old-fashioned method, which I must confess has not been displaced in my estimation by the current scabeticides and one-day cures for which a hurry-up civilization calls. The previous treatment for scabies of the patients whom I observed, and my own failures, brought out some points for emphasis in dealing with this infestation. First, early diagnosis of the scabies greatly diminishes the complications, simplifies the methods of treatment required and improves the results. Cases of less than a month's duration almost never relapsed and were cured in one thirty-six hour course. One of the difficulties in early diagnosis occasionally encountered is a lag in the symptoms of insensitive persons, or persons seemingly resistant, which amounted apparently to as much as a month from the known time of exposure. In fact there would seem almost to be such a thing as an asymptomatic carrier, the fathers of two family groups in my series making no complaints though presenting typical lesions. The relatively late development or complete absence of sensitization urticaria, with its increasing itchiness, may explain the occasional insignificance of itching at the outset, and in some cases of even prolonged infestation of certain insensitive individuals. Because of this carrier possibility, it is well to call in for examination entire families rather than merely the sleeping partner.

Making the perhaps rather large assumption that patients who do not return for observation on the seventh day, as requested, are cured, data were had on twelve relapsing patients who had one or more recurrences, in one case repeatedly for as long as a year. A second reinfestation of an entire family of good social position and good hygiene took place at the end of four years of freedom. Examination of the relapses in relation to complications showed that thirty-two cases might have been regarded as recurrent by the inexperienced and subjected, as some of them were to repeated and undesirable treatment. The twelve bona fide relapses clearly brought out two causes: (1) inadequate instruction of the patient relative to disinfection of clothing and bedding, and (2) an infected but unexamined and untreated contact, most often husband or wife.

I believe it may safely be said that the detail of instructions for personal disinfection, the order not to refill prescriptions without reexamination, follow up to be sure the individual infestation is terminated, precise directions regarding sterilization of fomites, and the detection and effective treatment of all reachable contacts are more important than any individual prescription formula in dealing with scabies. To prescribe a proprietary or give a prescription without all these accompaniments is a direct invitation to complications and relapse.

So far as preparations go, from the tub of Peru balsam and the long handled brush, to the Danish one-day cure, almost anything containing Peru balsam and volatile sulfides, or either sulfur or betanaphthol in a concentration of not less than 10 per cent for the adult, will be effective. The use of an ointment base as a defense against excessive action of the drug and a protection against bath pruritus seems to me desirable,

² With the recently Council accepted pyrethrum ointment (pyrethrum likewise at times a potent allergen) this cries offers no experience for it antedates the preparation.

and repeated application with alternate scrubblings seems to me to insure a result with a single course. The directions that are issued to my patients are given them in writing as follows

ANTISCABETIC DIRECTIONS

First Night Bathe with hot water and soap, soaking well and scrubbing all burrows and pimples open with brush. Rub in ointment over whole body except face and scalp. Special attention to hands, arm pits, waist, nipples, groin and genitals (external).

Next Morning Rub ointment again, without bath. Wear same underwear.

Next Night Rub ointment third time, without bath.

Second Morning Bathe thoroughly, do not apply ointment, powder the body with borated talcum all over. Then put on fresh underwear. Have all bedding changed (sheets, pillow cases).

Send blankets and everyday suit to dry cleaner.

Send linen and underwear to laundry.

Return to the office one week from today.

Use no more ointment unless ordered.

Such particularity may seem to lean over backward, but with it only two relapses occurred in my treatment series, and one of these was due to my failure to detect the contact source at the outset.

A failure to cure with the first course must be rather carefully handled. A week is hardly enough time to determine relapse, so that a longer period may be allowed to pass before a second course is given. It is best to avoid a repetition within two weeks, but it is allowable in one week with tough-skinned or seborrheic patients. Relapse should always be the signal for a thorough inquiry as to the detail with which the regimen was followed, and vigorous reiteration of the procedure, with a renewed search for contact source. A second failure throws the diagnosis seriously into question and raises all the differential problems of urticaria and other complications, and nonscabetic conditions such as interdigital dermatophytosis and dermatophytid. The interdigital vesiculation of the "phyte'-phytid" hand when slight may be confusing even to the expert, but it is impossible to identify doublets plus burrows in it on lens inspection.

A therapeutic test for scabies is a legitimate diagnostic resort after the case has been carefully weighed for ordinary diagnostic evidence. It is inexcusable to plaster every itch with sulfur, of course. The most striking evidence of the success of a therapeutic test is the immediate relief of the intolerable itching on the night of the very first application of the "cure." Failing this sign, treatment is hard to interpret in its objective results within two weeks, and the urticarial complications may by producing apparent "recurrence" seriously confuse the result. Moreover, many diffuse pruritic syndromes including dermatitis herpetiformis are much, though temporarily, relieved by not too much sulfur or betanaphthol. Even the expert will find himself occasionally unable to make a decision short of stopping all forms of treatment and inducing the patient to bring himself and his contacts in repeatedly for the detection of objective evidence.

The urticarial, pyogenic and eczematoid sensitization complications of scabies yield in my experience best to fractional doses of x-rays to the principally involved areas, plus autohemotherapy, and a sharp temporary reduction in carbohydrate and alcohol intake. So uniformly good have my results been that I now treat the patients thus as soon as the diagnosis is made and the complication recognized, coincidently with the prescription of the antiscabetic "cure." The cure of infestations

with even rather pronounced complications can thus be brought within a seven to ten day period. Lacking these appurtenances, starch baths, olive oil and lime water lotions, or ammoniated mercury and boric acid ointments to the worst involved areas, with large doses of calcium salts by mouth, are more slowly effective. A weak ammoniated mercury ointment for two days and the substitution of styra^x and betanaphthol for sulfur may be necessary in infants or children with severe impetiginous complications.

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THE EFFECT OF ESTROGENIC SUBSTANCE ON HUMAN DIABETES

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If it is true that the anterior pituitary gland secretes a hormone which has an antagonistic effect on insulin (sometimes considered a diabetogenic hormone) and if it is also true that estrogenic substance has a depressing effect on the activity of the anterior pituitary then it should follow that the administration of estrogenic substance should favorably influence the diabetic state and even cause the chemical characteristics of diabetes to disappear.

A large and varied amount of experimentation has been reported to indicate that the secretion of both the anterior and posterior pituitary bodies have an antagonistic effect on insulin function. The series of articles on the endocrine system that recently appeared in *THE JOURNAL*¹ has so thoroughly covered the literature that we felt it superfluous to include any further bibliography. The method of approach to the study of the antagonistic relationship of pituitary to insulin function may be classified as follows:

1 The injection of anterior pituitary or the existence of hyperfunctioning anterior pituitary bodies in disease states is capable of producing a diabetic picture.

2 The experimental removal of the pituitary gland or the clinical state of hypopituitarism produces a hypoglycemia and an increased sensitivity to insulin.

3 The experimental production of diabetes by pancreatectomy is prevented by the removal of the hypophysis.

4 The posterior pituitary hormones have been suspected of possessing properties that are capable of antagonizing the activity of insulin.

There have been several reports in the literature to show that estrogenic substance has the property of depressing the activity of the anterior pituitary.

Spencer and his associates² have demonstrated that estrogenic substance is capable of depressing both the gonadotropic and the growth principle of the anterior pituitary in castrated rats. Meyer and his co-workers³ have confirmed the inhibitory effect of estrogenic sub-

The authors are indebted to Dr. Henry Joachim, physician in chief, for his cooperation.

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¹ Glandular Physiology and Therapy, *THE JOURNAL* from Feb. 9 to Aug. 31, 1935, published in book form by the American Medical Association, 1935.

² Spencer, J., D'Amour, F. E. and Gustafson, R. G. *Endocrinology* 16: 647 (Nov. Dec.) 1932.

³ Meyer, R. K., Leonard, S. L., Hisaw, F. L. and Martin, S. J. *Endocrinology* 16: 655 (Nov. Dec.) 1932.

stance on the gonadotropic hormone Leiby⁴ established an increase in weight of the pituitary, thyroid and adrenal after the administration of theelol to mature albino rats. In another paper⁵ he reported that these glands show a marked increase in weight after a combination of anterior pituitary-like principle from the urine of pregnancy and theelin is given. These observations are decidedly contradictory to the determinations of Burch and Cunningham,⁶ who found that the gonadotropic function of the pituitary is increased after the administration of placental extract. An important contribution which presented a practical clinical bearing in the treatment of diabetes came from Barnes and Regan.⁷ These authors administered 200 rat units of estrogenic substance⁸ to dogs for a period of three weeks before performing a pancreatectomy and continued the administration of the substance for a period of three weeks after the operation. They showed that their animals did not develop a pronounced form of diabetes until after the substance was discontinued. They also removed the pancreas of dogs without previous preparation with estrogenic substance, permitting the state of total diabetes to develop, and then were able to reduce the severity of the disease by giving the substance. They concluded from their experiments that estrogenic substance, by suppressing the activity of the anterior pituitary lobe, favorably influences the experimental diabetic state in dogs and suggested its possible clinical application to human diabetes, warning, however, of the danger of adrenal cortical suppression.

These studies have recently been confirmed by the experimental investigations of Nelson and Overholser,⁹ who were able to prevent the development of glycosuria in pancreatectomized rhesus monkeys by the daily administration of posterior pituitary extract. They also found that the diabetic blood sugar was

These reports represent excellent experimental evidence that the pituitary possesses a principle which is capable of antagonizing insulin and that estrogenic substance has a depressing effect on anterior pituitary function.

This paper is concerned with a report of investigations intended to determine the possible application of these observations to the treatment of human diabetes.

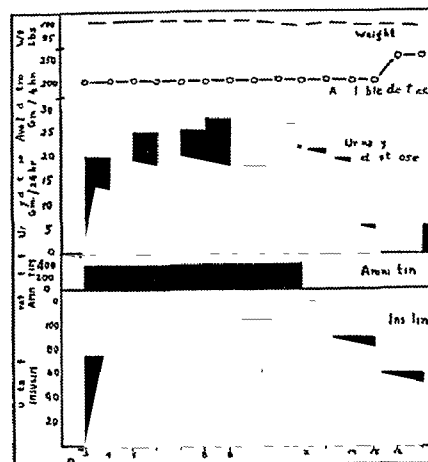


Chart 2—Course of diabetes in case 2

REPORT OF CASES

Seven patients with diabetes of varying degrees of severity were selected for this study. Estrogenic substance was employed in daily doses varying between 100 and 400 rat units. Adequate control periods were established in each case and the estrogenic substance was administered continuously for periods up to one month. The diabetic tolerance was established during the previous control period, the experimental period and the postexperimental period. In some cases the insulin was discontinued and estrogenic substance substituted. The details of each experiment will be found in the reports of the following cases and in the accompanying charts.

CASE 1—J. K., a man, aged 59, Jewish, admitted to the Israel Zion Hospital, Sept. 23, 1933, had developed diabetes at 48 years of age. He had been under an irregular form of diabetic management during this entire period. On admission he showed nothing significant in the physical examination except that he was slightly underweight. The fasting blood sugar was 340 mg per hundred cubic centimeters and he was excreting 32 Gm of sugar in twenty-four hours. He weighed 135 pounds (61 Kg). He was placed on a diet containing carbohydrate 125 Gm, protein 60 Gm, fat 90 Gm, totaling 1,550 calories, with an available dextrose content of 170 Gm. He was kept on the same diet during the entire experimental period. It will be observed from chart 1 that he excreted a fairly constant amount of sugar during the control period of four days and that his fasting blood sugar was constantly high. He was then given daily 100 rat units of estrogenic substance subcutaneously for a period of eight days during which he still excreted sugar ranging between 10 and 40 Gm. It was necessary to stop the investigation at this point because of the development of much pain at the site of injection, to which the patient objected. He was then immediately placed on 10 units of insulin three times a day and within three days the urine became sugar free and remained so. Blood sugars, however, remained constantly high.

CASE 2—M. P., a woman, aged 59, Jewish, admitted to the hospital Oct. 3, 1933, had a partial thyroidectomy fourteen years before for hyperthyroidism. Sixteen years following the onset of the menopause manifestations of diabetes appeared. She had received dietetic treatment during the entire period.

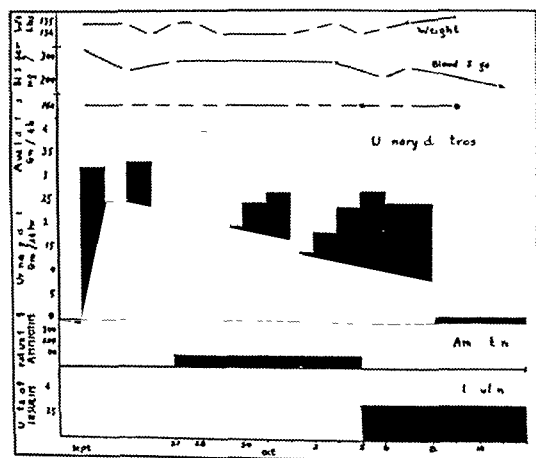


Chart 1—Course of diabetes in case 1

lowered after estrogenic substance was given and concluded that the estrogenic substance depresses the diabetogenic hormone of the anterior pituitary.

- 4 Leiby G M Proc Soc Exper Biol & Med 31 15 (Oct) 1933
- 5 Leiby G M Proc Soc Exper Biol & Med 31 17 (Oct) 1933
- 6 Burch J C and Cunningham R C Proc Soc Exper Biol & Med 27 331 (Jan) 1930
- 7 Barnes B O Regan J F and Nelson W O Improvement in Experimental Diabetes Following the Administration of Amniotin J A M A 101 926 (Sept 16) 1933
- 8 Amniotin was the estrogenic substance used and was furnished to us by E. K. Squibb & Son
- 9 Nelson W O and Overholser M D Proc Soc Exper Biol & Med 32 150 (Oct) 1934

of the diabetes and had taken insulin for one year prior to her admission. On admission to the hospital she showed manifestations of hyperthyroidism, diabetes and hypertension. She appeared chronically ill and was wasted. She had a nodular enlargement of the right lobe of the thyroid the size of an apricot. The heart was fibrillating, the liver was three finger-breadths below the costal margin, congestive rales were present

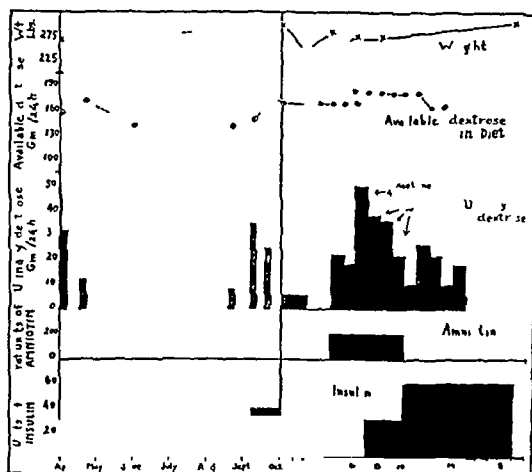


Chart 3—Course of diabetes in case 3

at the bases of the lungs and there was a slight edema of the abdominal wall, as well as a pretibial edema. The diagnosis was that of a toxic thyroid adenoma, essential hypertension, coronary sclerosis, auricular fibrillation, myofibrosis cordis, cardiac decompensation and diabetes mellitus with ketonuria. The basal metabolic rate was plus 20 per cent. The blood pressure was 180 systolic, 100 diastolic and she weighed 102 pounds (46 Kg) on admission. Urine showed 2 per cent sugar and 3 plus acetone in a casual specimen. Fasting blood sugar was 253 mg per hundred cubic centimeters. She was placed on a diet containing carbohydrate 175 Gm, protein 75 Gm and fat 125 Gm with 25 units of insulin three times a day. She was also given 400 rat units of estrogenic substance subcutaneously each day. The urinary excretion of sugar continued between 12 and 28 Gm in spite of the fact that the insulin was gradually increased to a point at which she received

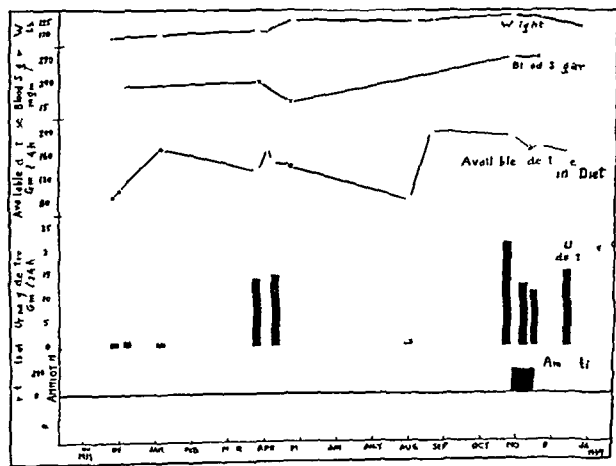


Chart 4—Course of diabetes in case 4

120 units daily. At the end of nine days the estrogenic substance was stopped, following which the urinary sugar promptly disappeared. Even when insulin was reduced to 60 units daily four days after estrogenic substance was stopped, the urine still remained free from sugar. This improvement occurred in spite of the fact that the available dextrose was increased from 210 to 256 Gm.

This experiment appears to indicate clearly that the estrogenic substance not only did not favorably influence the diabetic state but interfered with the recovery of the patient, which occurred promptly after the cessation of the use of the estrogenic substance.

CASE 3—I W, a woman, aged 69, Jewish, had been known to have diabetes for eighteen years. The diabetes developed after the menopause. For two years after her admission she had been attending the diabetic clinic, during which time her tolerance was maintained rather constantly on a diet containing 200 Gm of available dextrose, with 25 units of insulin daily. She was admitted to the hospital Sept 30, 1933, for the purpose of being studied for the effect of estrogenic substance under adequate control conditions. She was given a diet of carbohydrate 125 Gm, protein 60 Gm and fat 100 Gm, with 15 units of insulin in the morning and 10 units of insulin at night. Insulin was stopped on the third day, as a result of which she began to excrete from 19 to 22 Gm of sugar in the urine each twenty-four hours. Beginning with the fifth day she was given 200 rat units of estrogenic substance daily by hypodermic injection and within twenty-four hours the urinary excretion

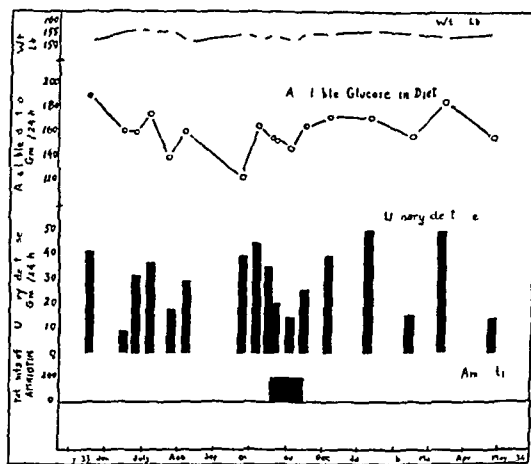


Chart 5—Course of diabetes in case 5

of sugar rose to 50 Gm and showed acetone and diacetic acid. On the seventh day she was put back on 30 units of insulin and the estrogenic substance was still continued. Glycosuria did not disappear until the estrogenic substance was stopped and the insulin increased to 60 units daily.

This case clearly shows that the estrogenic substance, after insulin was suspended, had absolutely no effect on retarding the severe break in sugar tolerance with a rapid development of ketonuria, which could be controlled only by the subsequent administration of insulin.

CASE 4—B B, a woman, aged 54, Jewish, was found to have diabetes in 1929 by a routine examination at the time when the patient had an appendectomy performed. The menses ceased after the operation. Under observation at the clinic, Aug 20, 1932, she complained of weight loss, blurring of vision, pruritus vulvae and weakness. Examination disclosed manifestations of vascular sclerosis, hemorrhages in the eyegrounds and a hypertensive heart. The blood pressure was 194 systolic, 100 diastolic. She was treated with diet and insulin. Her diet contained 175 Gm of available dextrose and 20 units of insulin a day for one month during which time the clinical symptoms improved considerably. Then she voluntarily stopped using insulin. Chart 4 discloses the course of the patient's diabetes for one year prior to the experiment with estrogenic substance. Oct 26, 1933, she was started on 200 rat units of estrogenic substance oral daily for twenty-three consecutive days.

Although the subjective menopausal symptoms improved, it will be seen from chart 4 that there was no change in her diabetic state.

CASE 5—C W, a woman, aged 42, Jewish, who came under observation June 2, 1929, complained of the cardinal symptoms of diabetes of four months' duration. Her symptoms were polydipsia, polyphagia, polyuria, progressive asthenia, oral dryness and pruritus vulvae, she also had frequent attacks of flushes and sweats, in spite of the fact that the catamenia had been regular. The patient had been maintained on a diet containing variable quantities of available dextrose ranging from 150 to 190 Gm. She had refused to take insulin at any time and had been continuously on dietetic management and always excreted between 15 and 40 Gm of sugar daily. She was never considered a very cooperative patient.

Chart 5 shows the record of her diet and urinary excretion for a period of six months before the experiment with estrogenic substance was performed. Oct 17, 1933 she was started on 200 rat units of oral estrogenic substance daily, which was continued to November 14, a period of approximately four weeks. Her chart also discloses the character of her urinary excretion of sugar for six months after the experiment was stopped.

It will be observed that there is no appreciable difference between the control period, the experimental period and the postexperimental period.

CASE 6—L K, a woman, aged 35, Jewish, came under observation at the clinic with a history of diabetes of two years' duration. She was found to have 10 per cent sugar in the urine, with acetone. She was adequately controlled with a diet of carbohydrate 160 Gm, protein 60 Gm, fat 75 Gm and 40 units of insulin daily. Oct 12, 1933, she was given 200 rat units of estrogenic substance subcutaneously, at which time she was excreting traces of sugar in the urine. She was given estrogenic substance for one month while continuing the same dose of insulin. The urine persisted in showing the same traces of sugar and the blood sugar remained at a level fluctuating between 220 and 280 mg per hundred cubic centimeters.

There was no evidence in this case that diabetes was influenced by estrogenic substance.

CASE 7—M B, a woman, aged 57, Jewish, admitted to the hospital Sept 25, 1933, had had diabetes fourteen years, the onset following the menopause. Her initial complaint was pruritus vulvae and her weight at that time was 280 pounds (127 Kg). She had received dietary treatment and had lost considerable weight. She was admitted to the hospital because of an attack of multiple furunculosis of the scalp. Physical

maintained during the entire experimental period. Three days after admission she was given 200 rat units of estrogenic substance subcutaneously daily for nine consecutive days. Although her blood sugar dropped to 260 mg per hundred cubic centimeters, the urinary excretion continued to rise progressively to 40 Gm a day. The patient was then put on 35 units of insulin daily but she left the hospital against advice before an

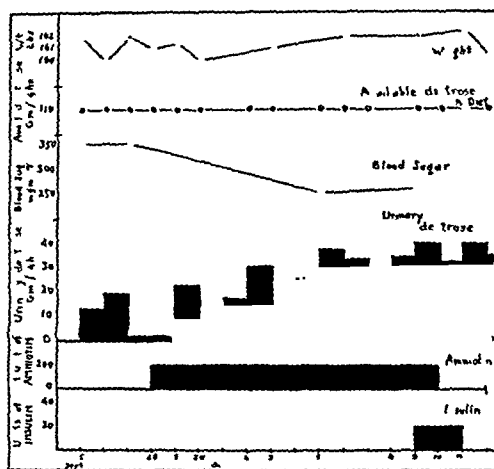


Chart 7—Course of diabetes in case 7

opportunity could be obtained to compare the effect of insulin with that of estrogenic substance. There was no evidence that the estrogenic substance had any effect on the diabetic state.

COMMENT

The observations presented here appear to indicate that estrogenic substance has absolutely no effect on the course of human diabetes. The cases in which insulin was stopped and estrogenic substance substituted showed a rapid break in sugar tolerance, sufficient to precipitate the development of a ketonuria. In case 2, which was so severe that we were afraid to suspend the use of insulin during the experiment with estrogenic substance, so severe a diabetic state seems to have developed during the experimental period that we found it necessary to increase the insulin dosage from 75 units to 120 units daily in order to control it. Another interesting feature in this case is that rapid desugarization could be effected as soon as the estrogenic substance was stopped, and even reducing the insulin to the preestrogenic substance period resulted in better control. One may safely say that at the time this patient received daily subcutaneous injections of 400 rat units of estrogenic substance the diabetic state was more severe.

Since our clinical experiments are at such marked variance with the observations reported in experimentally produced diabetes in animals by pancreatectomy, we can only say that human diabetes is pathogenically not similar to experimental diabetes in animals. Although the chemical phenomena of disturbed dextrose oxidation and synthesis are similar in the two instances, it does not necessarily follow that the human diabetic state results only from a nonfunctioning pancreas. And by the same token, what appears to alter the picture of the pancreatectomized animal cannot be logically applied to the human diabetic patient.

CONCLUSION

1 It appears from the literature that anterior pituitary hormone antagonizes insulin, that estrogenic substance suppresses anterior pituitary function, and that

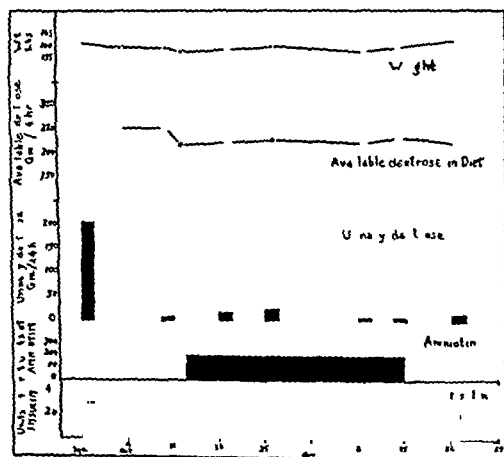


Chart 6—Course of diabetes in case 6

examination disclosed, besides the furuncles, manifestations of arteriosclerotic heart disease moderately decompensated as indicated by moist rales at both bases, a palpable liver and a moderate amount of pitting edema of both legs. The blood pressure was 180 systolic, 110 diastolic and the fasting blood sugar 355 mg per hundred cubic centimeters. She was excreting 12 Gm of sugar in the urine. She weighed 162 pounds (73.5 Kg). She was placed on a diet of carbohydrate 150 Gm, protein 60 Gm and fat 110 Gm without insulin. This diet was

the administration of estrogenic substance partially prevents the development of diabetes following pancreatectomy

2 Estrogenic substance does not have any beneficial effect on the tolerance of the diabetic patient

123 Eighth Avenue

NEUROFIBROMATOSIS

THE EFFECT OF PREGNANCY ON THE SKIN MANIFESTATIONS

JOHN C SHARPE, MD

AND

RICHARD H YOUNG, MD

OMAHA

A survey of the literature reveals only a few examples of the effect of pregnancy on neurofibromatosis. Sutton¹ reported the case of a woman, aged 38, who noted pedunculated tumors of the skin, which appeared during her first pregnancy and disappeared completely following delivery. The tumors reappeared during a second pregnancy and persisted. The microscopic study of the skin lesions revealed them to be neurofibroma of von Recklinghausen. Recently, cases of preexisting neurofibromatosis that were made worse with the occurrence of pregnancy but showed a remission following delivery are reported by Kushner,² Nishizaki³ and Hirsch.⁴ Other accounts in the literature⁴ describe easily confused lesions termed "pigmented warts" and "fibroma molluscum gravidarum," which appear during pregnancy and disappear following delivery.

During the past three years we have examined fifteen cases of the various types of Recklinghausen's neurofibromatosis. In this group we were impressed by the fact that in four cases the course of the disease was definitely influenced by pregnancy. The changes with pregnancy were so dramatic and the effect so distressing that a report seemed warranted.

REPORT OF CASES

CASE 1—Development of skin pigmentation and tumors during the latter half of the first pregnancy with no change after delivery or with second pregnancy

J A, a white woman, aged 34, married, a housewife, entered the University of Nebraska Dispensary, June 11, 1935, complaining of a sharp, paroxysmal pain in the left upper part of the chest and back, which had been present for two weeks. On examination, interest was at once aroused because of the presence of a moderate number of irregular, café au lait pigmented spots in the skin of the trunk. In addition there were about twenty painless, asymmetrical skin and subcutaneous tumor growths of the lower part of the back and the abdomen. There was a slight scoliosis. Roentgenograms of the chest revealed a mass, which was considered a neurofibroma involving the intervertebral foramina of the third and fourth dorsal

vertebrae and probably accounting for the pain. Both the patient and her husband stated quite definitely that there had been no skin pigmentation or tumors prior to her pregnancy. They observed their appearance and progression during the latter half of her first pregnancy. Following a normal delivery, the skin manifestations persisted. A second pregnancy seven years later caused no apparent change in either the skin pigmentation or the size and number of the nodules. There had been one miscarriage five years before. At present, her first child has a clear skin, but her 7 year old son has a number of scattered, irregular brownish pigmented spots on his back and abdomen which have been present since infancy. The family history was interesting in that the patient's mother had both skin tumors and pigmentation and died of a sarcoma (?) of the left femur. The patient's two brothers have skin tumors, and one of their daughters is known to be deeply pigmented.

CASE 2—Development of multiple skin tumors and pigmented areas during first pregnancy, with an increase in these manifestations during each of seven successive pregnancies

E C, a white woman, aged 56, a widow, entered the University Hospital, Jan 1, 1935, because of a constant pain in the left thigh for the preceding six months. Examination disclosed multiple painless skin and subcutaneous nodules, pigmented and nonpigmented, distributed mostly on the trunk, with a few on the face and extremities. The skin of the abdomen and neck was irregularly pigmented a brownish black. Before her marriage, the patient's skin was clear except for an occasional freckle on the face and forearms, and one small skin tumor below the left knee. During her first pregnancy, at the age of 19, multiple skin tumors and pigmented spots appeared on her abdomen and back. Following delivery the skin nodules ceased to increase in size and number, but during each of the seven successive pregnancies the same phenomenon repeated itself. Except for three miscarriages there were no other complications of pregnancy. Five of her children are living and well, one daughter, aged 24, is moderately pigmented and has a few subcutaneous nodules. The patient's father was heavily "freckled", the mother, four brothers and five sisters all have clear skins.

CASE 3—Pigmentation prior to pregnancy, with appearance of skin tumors during first pregnancy and resumption of activity with each of six pregnancies

M E, a woman, aged 38, married, Italian, a housewife, entered the University Hospital, Aug 4, 1932 in the active stages of labor in her sixth pregnancy. On examination she showed a deeply pigmented skin, brownish black, most marked on the neck and upper extremities. In addition there were many painless skin and subcutaneous nodules of varying size on the abdomen, chest, back and extremities. Though she had had a few pigmented spots on her back since early infancy, the skin tumors had not appeared until the latter half of her first pregnancy. The nodules and pigmentation ceased to advance following delivery, but resumed their activity with each of the following pregnancies. There had been one miscarriage. Because of the presence of a severe scoliosis, extra precautions were taken with each delivery, but no complications had developed. Two of the patient's daughters, aged 3 and 9, have several pigmented café au lait spots on the trunk and extremities, and, in addition, one has a small subcutaneous nodule covered with hair. The patient's mother had had both skin tumors and pigmentation, but her one sister and brother have clear skins.

CASE 4—Generalized pigmentation and formation of skin tumors during first pregnancy with exacerbation of these features in seven successive pregnancies

M J, a white woman, aged 34, married, housewife, entered the University Hospital, Jan 17 1935 with the chief complaints of pain and swelling in the right inguinal region of several weeks' duration. On examination, she showed an extensive, dark irregular freckling over the body, with numerous soft, small, painless subcutaneous nodules distributed mostly over the trunk and arms. Since infancy the patient had had a flat brown spot, 3 inches (7.6 cm) in diameter, in the skin of the right inguinal region. It had several tufts of hair growing from it. Generalized pigmentation and skin tumors appeared and per-

Read before the Central States Association of Obstetricians and Gynecologists Oct 10 1935

From the Departments of Internal Medicine and Neuropsychiatry University Hospital University of Nebraska College of Medicine

1 Sutton R L A Clinical Note of Fibroma Molluscum Gravidarum Am J M Sc 147 419 423 (March) 1914

2 Kushner J I Pregnancy as a Complication of Neurofibromatosis (von Recklinghausen's disease) Am J Obst & Gynec 21 116 118 (Jan) 1931

3 Quoted by Kushner

4 Brickner S M Fibroma Molluscum Gravidarum A New Clinical Entity Am J Obst 53 191 199 (Feb) 1906 De Lee J B and

Buslig W H Fibroma Molluscum Gravidarum Surg Gynec & Obst February 1908 pp 204 205 Hirst B C Etiological Influence of

Pregnancy on Molluscum Am J Obst 63 256 257 (Feb) 1911

Brickner S M Fibroma Molluscum Gravidarum Am J Dermat 16 240 243 (May) 1912 Ward Ernest Multiple Pigmented Warts in Pregnancy Brit J Dermat 25 153 154 (April) 1913

sisted with each of seven pregnancies. There was no difficulty in her deliveries, there had been two miscarriages. The large tumor in the inguinal region had increased noticeably in size with each of the last three pregnancies, and for some unknown reason during the few weeks preceding admission. Of the five children living and well, three show large brown areas of skin pigmentation but no nodules. The patient's mother and father have a clear skin, three sisters all show a deep "freckling" on their faces and necks.

COMMENT

In the report of these four cases, one is immediately impressed with the very definite, detrimental effect of pregnancy on the course of Recklinghausen's neurofibromatosis. Three of the patients had noted café au lait pigmentation of the skin since early childhood (forme fruste), the fourth had had a clear skin until her first pregnancy. In only one case had a solitary subcutaneous nodule developed before pregnancy. In all the patients the occurrence of the first pregnancy gave rise to the appearance of numerous skin and subcutaneous tumors. Histologic study classified them as neurofibromas. In addition, numerous areas of brownish pigmentation occurred that were confined chiefly to the trunk. In all instances, delivery seemed to cause an arrest in the growth and multiplicity of the skin tumors. However, with each subsequent pregnancy the same phenomena occurred. Two patients had had one miscarriage, one had had two miscarriages and the fourth had had three miscarriages. Delivery was normal in each case. Two patients gave a history of irregular menstrual periods and dysmenorrhea. The family history of the four cases reveals that one or both parents had manifestations of the disease. It is also pertinent that each of the four patients have one or more children with the incomplete form of the disease. Three of the four patients are yet in the child bearing age group and are greatly disturbed concerning the possibility of additional pregnancies. In three of the four cases there has been such advancement of the disease that the tumors by pressure on or direct extension into the nerves have caused pain. Besides the production of pain in these three cases the cosmetic effect, the possibility of bone or central nervous system involvement and the chance of ulceration or malignant degeneration are all potent reasons for avoiding additional pregnancies. This naturally leads to the question of sterilization of the patients. In justification, young women with the "incomplete" form of the disease should be warned about the harmful effects of pregnancy.

In the male cases, except for the influence of puberty, there is no comparable phenomenon occurring in their life that increased the skin manifestations. Yet the disease may be just as far advanced and have just as many complications as the type we describe. The factor in pregnancy that causes the lighting up of what might be called the dormant, "incomplete" form of the disease is unknown. We are not yet prepared to theorize on the cause of the disease but the association of an endocrinopathy, very possibly pituitary, in combination with a developmental anomaly is naturally an inviting explanation. The association of acromegaly and neurofibromatosis has been reported several different times.

SUMMARY

1 Various combinations of skin nodules and pigmentation may occur before, during and after pregnancy.

2 The exacerbation of the disease by pregnancy increased the possibility of bone or central nervous

system involvement, the chance of ulceration or malignant degeneration, and the incidence of pain.

3 In four cases Recklinghausen's neurofibromatosis was made definitely worse with pregnancy, as shown by an increase in skin pigmentation, tumor growth, and the development of pain.

4 There were no complications of delivery as a result of the disease.

5 It would seem advisable to prevent the occurrence of pregnancy in those women with either the "incomplete" or complete form of the disease.

1414 Medical Arts Building

REDUCTION IN COLLOIDAL OSMOTIC
PRESSURE OF BLOOD SERUM
AFTER SALT INGESTION

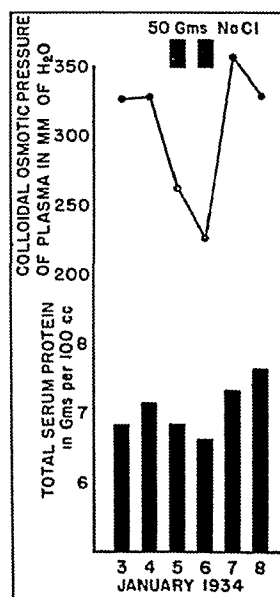
HAROLD C TORBERT, M.D.

AND

GARNETT CHENEY, M.D.

SAN FRANCISCO

During the course of study of effects of high sodium chloride intake on the blood, the osmotic pressure of plasma protein was measured before, during and after



Decrease in colloidal osmotic pressure and serum protein concentration as a result of ingestion of 5 Gm. of sodium chloride daily for two days in subject D. R.

the chart. There was no change in the albumin-globulin ratio during salt administration. No control experiments with other electrolytes have been completed.

COMMENT

The fall in osmotic pressure of plasma colloids during periods of forced salt ingestion is greater than can be accounted for by change in plasma protein concentration or in albumin-globulin ratio. The practical implications are obvious. It has been known for a long time that restriction of salt in edematous patients with nephritis with low plasma protein may be followed by relief of edema and vice versa. No observations are

on record, however, of colloidal pressure studies under these conditions. In view of the present experiments a reasonable explanation is forthcoming, which explains edema without assuming two entirely different mecha-

*Effects of 50 Gm of Sodium Chloride Daily for Two Days**

Date	Plasma Sodium Chloride Mg per 100 Cc	Plasma Cell Ratio in Volumes per Cent of Cells	Total Serum Protein in Gm per 100 Cc	Colloidal Osmotic Pressure in Mm of Water
Subject H C T December 1933				
11	574	44.8	7.58	288
12	562	44.0	7.34	278
13	557	44.4	7.41	277
14§	582	41.8	6.4	186
15§	579	40.1	6.36	177
16	560	41.1	6.94	267
17	555	42.9		242
19	568	43.5	6.79	263
Subject D R January 1934				
3	557	44.0	6.63	326
4	554	45.5	7.12	328
5§	602	41.7	6.83	256
6§	582	42.9	6.61	227
7	568	43.5	7.38	307
8	574	45.5	7.68	320

* Edema of face and of ankles noted on second day. The hematocrit readings and plasma protein concentrations indicate a blood dilution of about 10 per cent with from 30 to 35 per cent fall in colloidal osmotic pressure.

† Determined by method of Barnett Jones and Cohn J. Exper. Med. 55: 683 (May) 1932.

‡ By first method of Krogh and Nakazawa. Biochem. Ztschr. 188: 241 1927.

§ Subjects ingested 50 Gm of sodium chloride during the twenty-four hours preceding each of these observations.

nisms acting independently—as has been done in the past—namely, changes in plasma protein level on the one hand and disturbances of ionic balance on the other.

RECENT ADVANCES IN THE SURGICAL TREATMENT OF CHRONIC DUODENAL ULCERS

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NEW YORK

The proper surgical management of gastroduodenal ulcers is one of the most controversial subjects as judged by perusing the most recent literature. Different procedures for the cure of peptic ulcers have been advocated since Wolfer introduced gastro-enterostomy for the alleviation of pyloric obstruction. In spite of the period of five decades that has elapsed since his important contribution, opinions have differed widely among surgeons as to the best form of treatment.

For the sake of brevity I shall refrain from entering into a historical review of this subject. As to the advances that have been made during the last fifty years in the treatment of gastric ulcers, one need mention only the terms gastro-enterostomy, local excision, sleeve resection and partial or subtotal gastrectomy to indicate the progress in this field.

In the surgical treatment of duodenal ulcers, progress has been much slower. The palliative methods (gastro-enterostomy with and without pyloric exclusion or with excision of an ulcer on the anterior wall of the duodenum and the different forms of pyloroplasties) seemed to be well entrenched until Haberer¹ introduced the more radical method of partial gastrectomy as the method of choice for duodenal ulcers.

It should be emphasized that it is absolutely impossible to make one method fit every condition. No experienced gastric surgeon will claim that partial or subtotal gastrectomy is applicable to every case of peptic ulcer.

The issue has been clouded by overenthusiasm for the radical methods on the one hand and by undue stress on the dangers of gastric resection by the opponents of this method on the other. It has been asserted—and undoubtedly with a great deal of justification—that the substitution of gastric resection for gastro-enterostomy by the general surgeon would raise the mortality to a prohibitive level.

Radical gastric surgery will never be in the realm of the general surgeon with a limited experience in this special field. In order to obtain good results an organization is required, consisting not only of a surgeon with extensive experience in this special field of surgery but of a specially trained intern and nursing staff. Close observation of the patient in the postoperative course is one of the essentials to success in this field of surgery. It is one of the unavoidable results of further progress in new fields of surgery that special groups are formed among surgeons. Nobody will deny today the justification for specialization in thyroid, brain or genito-urinary surgery, to mention just a few that have been formed into special groups within recent years. Though the surgeon becomes narrower in his training, the patient benefits by this specialization.

I² have pointed out in a previous paper that it would be impossible to subject every case of gastroduodenal ulcer to a partial or subtotal gastrectomy without incurring a very high mortality. Anybody who has studied carefully in the dissecting room the anatomic relations and the close proximity of a deep duodenal ulcer to the common duct or of a high gastric ulcer in juxtaposition to the cardia will concede that ulcers in these locations cannot be attacked radically without a mortality of at least 20 per cent.

If the majority of ulcers were found in these locations, even the most skilful surgeon would find his mortality figures so high that he would soon abandon radical measures.

It is undoubtedly fortunate for both the surgeon and the patient that ulcers are rarely found in these two locations, probably not in more than about 5 per cent of the cases. The vast majority of ulcers are located in the distal half of the stomach and the first part of the duodenum, the so-called ulcer bearing area, and can be removed radically without undue risk to the patient.

If this small group of nonresectable ulcers is excluded from radical resection, partial and subtotal gastrectomy step out of the realm of hazardous surgery and become perfectly safe procedures, with a mortality not higher than gastro-enterostomy and with a percentage of permanent cures infinitely higher than that following the latter method.

It requires considerable experience to decide, after the affected region has been explored, whether an ulcer should be dealt with radically. The surgeon must keep in mind that once the ulcer has been freed from the pancreas (and about 50 per cent are located on the posterior duodenal wall) he cannot retrace his steps but must proceed with radical resection. In other words, he must visualize the anatomic relations before he begins the resection. He must know whether he will

From the Surgical Service of Mount Sinai Hospital.
Read before the Greater Boston Medical Society, Feb. 4, 1936.
1 Haberer, H. Anwendungsbreite und Vorteil der Magenresektion. Billroth I. Arch. f. klin. Chir. 114: 127 1920.

2 Lewisoohn, Richard. Factors of Safety in Resection of the Stomach for Gastroduodenal Ulcers. Ann. Surg. 90: 69 (July) 1929.

be able to effect a safe closure of the duodenum or whether secondary inflammatory changes are so extensive that the sutures cannot be carried through healthy tissues with the grave risk of a duodenal fistula, with possibly a lethal outcome

However even in the small group of cases in which radical removal is not possible, the patient need not be subjected to a gastro-enterostomy Finsterer's so-called *resektion zur ausschaltung* may be safely applied in these cases The name is not a happy selection I think that the term Finsterer's prepyloric or postpyloric gastric resection would have been more appropriate Finsterer's operation leaves the duodenal ulcer in place and carries the line of dissection either just in front of or just beyond the pylorus and insures complete sidetracking of the food By putting the ulcer at complete rest, secondary healing of the ulcer is supposed to be effected in a reasonable time In order to establish a marked reduction in the acidity, the proximal line of dissection should be carried as high up as possible on the lesser curvature of the stomach While the results after a Finsterer operation are often not as good as those following a resection, this method is far superior to a gastro-enterostomy

Gastro-enterostomy for nonobstructed duodenal ulcer is a badly conceived operation It should be used only in the small group of cases in which diseases of heart and blood vessels, lungs or kidneys contraindicate any major operation It may still have its place in the cases of marked obstruction due to a healed ulcer But I feel that even in this group of cases its value is limited and that resection should be attempted whenever possible A temporarily healed ulcer may become reactivated at a later period and cause recurrent symptoms Instead of being praised as the "method of choice," gastro-enterostomy should be demoted to a "method of expediency" in the treatment of duodenal ulcers when for very sound reasons the better operative methods are not applicable

The gradually increasing unpopularity of gastro-enterostomy is based not only on the frequency with which gastrojejunal or jejunal ulceration follows this procedure but on the persistence of symptoms, even in the absence of secondary ulceration The patient is not improved, the hyperacidity persists, the preoperative pylorospasm still gives him symptoms It can be demonstrated easily by giving an animal thionin blue that a gastro-enterostomy does not change the route for the passage of food which still leaves the stomach by way of the pylorus and duodenum and does not select the stom, which presents not only a useless but a very dangerous and vulnerable *locus minoris resistentiae*

Statistics as to the frequency of gastrojejunal ulcers vary widely They are variously estimated to be below 5 per cent and over 30 per cent It is perfectly clear that statistics cannot be compared unless they are computed on exactly the same basis Many statistics include only the cases in which operation has been performed and leave out of account those in which reoperation has not been done although they may possess all the clinical symptoms of recurrent ulceration The high incidence of gastrojejunal and jejunal ulcers as reported by me³ is to be accounted for by the fact that I included cases in which reoperation was done and cases in which operation was not done and in which the diagnosis was unequivocal Otherwise I would have had 18 per cent instead of 34 per cent

When this report was published ten years ago the results were criticized as unduly high not only in this country but in Europe Since then, however, other authors have published similar figures, in some instances even reporting a considerably higher incidence of this most dreadful postgastro-enterostomy complication than I did For instance, Enderlen and Zukschwerdt⁴ found 51 per cent of gastrojejunal ulcers among forty-two patients who had a previous suture of an acute perforation with gastro-enterostomy

I feel that my estimate was rather conservative Just as in primary ulcers, all shades of secondary gastrojejunal ulcerations are encountered These vary from the mild forms to those with very severe manifestations Hinton and Church⁵ have shown that gastrojejunal ulcers encountered at reoperation may present negative roentgen manifestations Unless one becomes "gastrojejunal ulcer minded," many of the cases of recurrence will be overlooked One must face the problem with an open mind and not be afraid to acknowledge the failure of a gastro-enterostomy to oneself and to one's patients If surgeons would scrutinize their results in this frame of mind, the percentage of gastrojejunal and jejunal ulcers as reported by them would probably rise to the neighborhood of 50 per cent

If an operation for gastrojejunal ulcer would represent a comparatively small operative risk, the major operation of gastric resection might be safely deferred, until this complication arises However, subtotal gastrectomy for gastrojejunal or jejunal ulcer is accompanied by a mortality of at least 20 per cent In the presence of a gastrojejunocolic fistula the mortality is much higher It is not fair to any patient who may have a good life expectancy in spite of his duodenal ulcer to perform a gastro-enterostomy which later on may require a secondary operation with such an inherent high mortality Gastric resection for gastrojejunal ulcer is one of the most formidable operations in the upper part of the abdomen Therefore, it is the duty of every surgeon to use surgical methods that minimize the possibility of gastrojejunal ulceration

If gastric resection is to replace gastro-enterostomy in the surgical treatment of duodenal ulcer it must answer two requirements the mortality must not be higher than that of gastro-enterostomy and the number of recurrent ulcers must be much lower than those following the latter operation

MORTALITY

The opponents of gastric resection have laid undue stress on the inherent high mortality of this operation Undoubtedly some mortality statistics of 10 per cent and over have kept surgeons from adopting this method However, other statistics show much better results Bohmansson's⁶ mortality of 31 per cent, Koennecke's⁷ of 15 per cent and my mortality of 2 per cent for partial and subtotal gastrectomy in primary gastroduodenal ulcers compare favorably with the postgastro-enterostomy mortality, which is usually reported as between 2 and 3 per cent Haberer⁸ has reported 100 consecutive gastric resections for gastroduodenal ulcers without a death It is immaterial for the operative

⁴ Enderlen F and Zukschwerdt L Die chirurgische Behandlung des peptischen Geschwüres Chirurg 5 849 (Nov 15) 1933

⁵ Hinton J W and Church R L The Incidence of Gastrojejunal Ulcer Following Gastro Enterostomy Tr Am Gastro Enterol A 37 102 1934

⁶ Bohmansson G Per oral communication to the author
⁷ Koennecke W Misserfolge nach Ulcusresektionen Chirurg 3 873 (Oct 15) 1931

⁸ Haberer H Gegenwärtiger Stand der operativen Behandlung des Magen und Zwölffingerdarmgeschwüres Deutsche Ztschr f Chir 200 231 1927

³ Lewisoohn Richard Frequency of Gastrojejunal Ulcers Surg Cases & Oct 40 70 (Jan) 1925

results whether the first or the second Billroth method is used. For instance, Bohmansson and Haberer use the first Billroth method or their modifications almost exclusively, Koennecke employs the first Billroth method at the rate of 2 to 1, and I prefer the second Billroth operation. It is not the place here to discuss the comparative advantages and disadvantages of these two methods. The surgeon should apply the method that gives him the best immediate and late results.

SECONDARY ULCERATION

When I reported the high incidence of gastrojejunal ulcers (34 per cent) following gastro-enterostomies for duodenal ulcers, performed in the surgical service of Dr. A. A. Berg, the argument was advanced that later statistics from this service might show that partial gastrectomy would not reduce these high figures to a considerable degree. This question could not be answered until sufficient time had elapsed for a proper comparison of these two methods. I have always held that at least an interval of five years is required before fairly definite conclusions about the frequency of gastrojejunal ulcers can be drawn. I am now able to prove my contention that the major operation of partial gastrectomy will reduce considerably the number of gastrojejunal ulcers. Mage presented last year before the Medical Fortnightly of the New York Academy of Medicine a five year follow up of the results of

Comparison of Follow-Up Results in Gastro-Enterostomy and Partial Gastrectomy for Duodenal Ulcers

	Cases	Operation Between	Reexamination in	Gastro-jejunal Ulcer	Proved by Reoperation
Gastro enterostomy	68	1915 and 1920	1924	23 cases (34%)	12 cases (18%)
Partial gastrectomy	82	1924 and 1929	1933	6 cases (7%)	1 case (1.2%)

partial gastrectomy performed by Dr. Berg and his associates between 1924 and 1929. A comparison of these two series, given in the accompanying table, shows that the frequency of gastrojejunal ulcers has been reduced from 34 per cent to 7 per cent. In both series the follow up after five years represented about 50 per cent of the material in which operation was performed.

The vast majority of statistics figure the incidence of gastrojejunal ulcers on the basis of reoperations. If one follows this procedure—though I do not approve of this method—the reduction is even more striking, namely, from 18 per cent to 1 per cent.

The value of these statistics lies in the fact that they were computed on the same basis. The same group of men used identical methods (careful personal examination of the patients, investigations by roentgenography and test meals) in the two series. A comparison of statistics published from different clinics relating to the follow-up results after gastro-enterostomy and gastric resection is of little value, as they are arrived at on a different basis.

TERMINOLOGY

A few words about terminology. Gastric resection means the removal of the distal half of the stomach (partial gastrectomy) or more (subtotal gastrectomy). Pylorotomies or partial antrumectomies should not be called gastric resections. The latter operations, though connected with a mortality as high as that following a properly executed gastric resection, have an incidence of gastrojejunal ulcers not lower than that following

gastro-enterostomy. Pylorotomy and partial antrumectomy fail to remove the ulcer-bearing area and to reduce the gastric acidity. It is perfectly evident, therefore, that recurrences are apt to follow these operations. The discussion is by no means purely academic. A number of authors have reported gastrojejunal ulcers following these incomplete operations. Instead of blaming the incomplete operation for the recurrence, they have called it a failure of partial gastrectomy. Only a sufficiently wide resection offers a chance for a permanent cure of the patient. A similar circumstance surrounds the surgery in exophthalmic goiter. The best results in operations on the thyroid gland are obtained when only small amounts of thyroid tissue are left behind. If recurrences occur after an incomplete thyroidectomy, the surgeon is justly blamed and not the method. In the same manner gastrojejunal ulcers, after pylorotomies, redound to the discredit of the surgeon rather than to the method.

COMMENT

Sebening⁹ has raised an interesting point by referring to the difference in the types of gastroduodenal ulcer encountered in central Europe and in this country. He has tried to explain the reason for the popularity of gastric resection in Germany and Austria as opposed to the popularity of gastro-enterostomy in North America on the basis that ulcers on the continent of Europe are much more severe and extensive than in the United States. I cannot agree with this statement. Frequent visits to European clinics have convinced me that ulcers are identical on the two continents and that all types of ulcers are found on both sides of the Atlantic. One has frankly to face the issue of whether gastro-enterostomy or gastric resection is the preferable surgical procedure. The size of the ulcer is of minor importance, as gastrojejunal ulcers follow small duodenal ulcers just as often as they do large ulcers.

The opponents of gastric resection for duodenal ulcer have laid considerable stress on the fact that a postoperative anacidity is established in not more than about 66 per cent of the cases. The argument has been advanced that it is unjustifiable to subject patients to the major operation of partial gastrectomy if about 34 per cent continue to have free hydrochloric acid. This contention fails to consider two important points: 1. Even in the presence of a postoperative acidity the reduction in free and combined acids is much greater after gastric resection than after gastro-enterostomy. 2. Haberer introduced partial gastrectomy as the operation of choice for duodenal ulcers in 1920. The fact that this operation effects a postoperative anacidity in the majority of the cases was established by Lorenz and Schur¹⁰ in 1922. Haberer planned this operation in order to remove the duodenal ulcer and the ulcer-bearing area (distal half of the stomach). Experience has shown that even in the presence of gastric acidity after partial gastrectomy the incidence of a secondary or recurrent ulcer is much smaller than after gastro-enterostomy or different forms of pyloroplasty.

Paterson¹¹ opened an address on gastric surgery before the British Medical Association in 1926 with the statement that "there is probably no operation in sur-

⁹ Sebening W. Why Partial Gastric Resection is Preferred for Peptic Ulcers in Germany. Proc. Staff Meet. Mayo Clin. 7: 139 (March 9) 1932.

¹⁰ Lorenz H. and Schur H. Unsere Erfahrungen ueber den Wert der Antrumresektion bei der Behandlung des Ulcus pepticum. Arch. f. Klin. Chir. 119: 239 1922.

¹¹ Paterson H. J. The Place of Gastrojejunostomy in Gastric and Duodenal Surgery. Brit. M. J. 2: 555 (Sept. 25) 1926.

gery which has added more to the sum of human happiness than gastrojejunostomy." I think that many patients who have had a gastro-enterostomy performed on them will counter with the statement that "there is probably no operation in surgery which has added more to the sum of human unhappiness than gastrojejunostomy," for there are no more agonizing pains than those caused by a gastrojejunal ulcer. After all, the final decision as to the value of any method is always made by the patient. The gospel of gastric resection is spreading among sufferers with ulcer. Many patients have told me that they would not have a gastro-enterostomy performed on them, as they had friends who, far from being improved, had been made much worse by this operation. They prefer the major operation of a partial gastrectomy with a good chance for a complete cure to a gastro-enterostomy with the high incidence of failures. Our follow-up clinic presents an entirely different picture since gastro-enterostomy has been replaced by gastric resection. Complete restoration to health is the rule, complaints about persistent gastric distress are the exception.

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AN OUTBREAK OF BOTULISM IN NEW JERSEY

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Although outbreaks of botulism have previously been reported, little appears about this disease in recent medical literature. An epidemiologic survey of reported cases in the last twenty-two years shows that this disease is far more common in the western United States, particularly along the Pacific coast, and is therefore considered more or less a rarity in the Atlantic coast states. However, it is true that many cases of botulism may have gone unrecognized, probably because of a confusion in diagnosis between this disease and encephalitis, acute poliomyelitis, toxic ophthalmoplegia, and various types of food poisoning.

Because of the extremely high mortality of cases that have occurred in this country, in all probability because botulism had been unsuspected, each individual outbreak merits attention on the basis of presenting new material in the further knowledge and investigation of this disease.

The outbreak described here occurred in Bernardsville, N. J. March 2, 1935, the meal presumably responsible for the onset having been consumed on the preceding day. A family of five, comprising the father, mother, two daughters and the grandfather, became suddenly ill soon after the consumption of a jar of home preserved peppers, served in the course of their meal. The history obtained from the mother relative to the serving of the peppers to all the members of the family together with the nature of the onset and acute symptoms characteristic of a food intoxication, led to the establishment of an early diagnosis of botulism. Two members (the father and the grandfather) died following a relatively short incubation period, before botulinus antitoxin was available. One of the two daughters received antitoxin in addition to all other therapeutic measures but died on the fourth day. The last two members (mother and daughter) were also given botulinus antitoxin in the course of their treatment and fortunately managed to survive, after a stormy convalescence of approximately two weeks.

Although the cases were first seen and diagnosed by the family physician (the author), the patients were placed under the therapeutic and hospital management of Dr. Rodgers of Somerset Hospital, Somerville, N. J., and Drs. S. C. Haven, McClain, C. B. Walker and A. F. Galasso of the Memorial Hospital, Morristown, N. J. Dr. Borow of Bound Brook, N. J., performed the autopsies. The patients were also seen in consultation by Dr. M. J. Rosenau, author of "Preventive Medicine and Hygiene" and member of the Harvard Medical School, Boston, who conducted a personal investigation of this particular outbreak of botulism. He substantiated the original clinical diagnosis and commented on the various phases of the disease.

REPORT OF CASES

CASE 1—Mr. O., aged 51, the father, was the first victim. On March 1, 1935, Mrs. O. opened a jar of home canned peppers and noted a rather peculiar odor but was not certain whether or not the peppers were spoiled. Consequently she proceeded to serve them in the form of a sandwich for her husband's lunch. The victim, noticing nothing peculiar about the taste or odor of his food, consumed his sandwich heartily at noon of the same day. The following morning he started for work but had to return after an hour or so, complaining of a vague pain in the pit of his stomach, dizziness and constipation, in addition to muscular weakness in his arms and legs. These symptoms manifested themselves approximately twenty-one hours after the ingestion of the contaminated food. In the evening of the same day (March 2), when examined for the first time by a physician, the patient complained of dysphagia, nausea and diplopia, with generalized weakness throughout. In view of the suggestive history and the clinical picture, a presumptive diagnosis of botulism was made and the patient was immediately sent to the nearest hospital. On admission his temperature was 97, pulse 70 and respirations 24, and his blood pressure was 110 systolic, 80 diastolic. The abdomen was somewhat distended and tympanic. Mentally he appeared alert, his sensorium was clear, and the pupils were dilated and reacted sluggishly to light and in accommodation. The reflexes were equally hyperactive. The respirations, although normal in rate, were very superficial. He appeared extremely toxic and was unable to express himself clearly. The pulse rate was increased to 112 during the last hour. On admission the patient was given 2 ounces of magnesium sulfate, which he swallowed with difficulty, and 50 cc. of dextrose solution intravenously. A nasal catheter was passed into the stomach, which was washed with a 3 per cent solution of sodium bicarbonate. The patient vomited considerable foul greenish gray contents, resembling spinach in appearance. He was also given constant symptomatic treatment. Botulinus antitoxin was not available at the time. Death occurred at 8:40 a. m. March 3, fifty-two hours and forty minutes after the ingestion of the poisoned food and twenty-three hours after the onset of the disease. The immediate cause of death apparently was respiratory paralysis.

CASE 2—Mr. L., aged 71, the grandfather, who was the next victim, complained of dizziness vomiting almost continuously of coffee ground and brown mucoid material with few solid particles, muscular weakness and blurred vision. These symptoms developed approximately thirty-three hours after the ingestion of the responsible food. On admission to the hospital his temperature was 98.6, pulse 74 and respirations 20. Shortly before he died, his temperature was 100.6, pulse 114 and respirations 28. The patient received general treatment, consisting of gastric lavages, catharsis, infusions of dextrose, respiratory and cardiac stimulants and oxygen and carbon dioxide inhalations. Specific treatment with botulinus antitoxin was not resorted to as the serum was not available at the time. Death occurred March 3, forty-six hours and twenty minutes after the consumption of the peppers and thirteen hours after the onset of the symptoms. The cause of death also was respiratory failure.

CASE 3—The last victim to die was Miss M. O., aged 23, who complained of extreme muscular weakness, headache, dysphagia and diplopia, twenty-seven hours after the ingestion

of the peppers. On admission to the hospital she appeared acutely ill, weak and toxic. The pupils were equal and reacted to light and in accommodation. There was rather coarse nystagmus on looking to the left. There was an external rectus paralysis on the right side. The breath was offensive. The throat was dry and the patient complained of dysphagia. The temperature was 99.2, pulse and respirations 22. The blood pressure was 125 systolic, 70 diastolic. The day following admission to the hospital she became cyanotic, requiring oxygen and carbon dioxide. Her speech became thickened and she complained of inability to expectorate the mucus that had collected in her throat. As her cyanosis increased she was placed in a respirator and for a time responded favorably. Botulinus antitoxin arrived from the Jensen-Salsbery Laboratories in Kansas City, Mo., on the second day of hospitalization, at which time 5,000 units of A and B antitoxin was given intravenously, following a negative conjunctival and skin test. She was given 10 per cent dextrose in saline solution intravenously at 11 50 p. m. that day. The patient was able to articulate more distinctly, felt more encouraged, and complained less about mucus collecting in her throat. The following afternoon, March 5, at about 4 p. m., she had a chill and her temperature ascended to 103.4, the pulse was 112, which later became 134, and respirations were 40 per minute. The heart sounds were normal. The patient was given 5,000 more units of A and B serum. Her blood pressure dropped to 98 systolic, 60 diastolic and breathing became shallow. No significant observations were made on percussion or auscultation of the chest. She was given extensive treatment. Just prior to death, however, some coarse rales were elicited over the anterior portion of the chest on both sides. Death occurred apparently from respiratory paralysis. The sudden rise in temperature, in the presence of chills, led to the suspicion of pneumonia setting in as a complication, favored by the patient's apparent exhaustion. This was later confirmed at necropsy. The patient died at 11 32 a. m., March 6 (the fourth day of hospitalization) approximately 120 hours after the ingestion of several slices of peppers.

CASE 4—Mrs. O., aged 46, the mother, did not manifest any symptoms prior to her admission to the hospital. About 1 p. m., March 3, forty-nine hours following the consumption of the contaminated peppers, she complained of diplopia, generalized weakness, and thickening of her speech. She developed a marked ptosis of the upper eyelids with a paresis of both external recti and superior and inferior recti. Five thousand units of A and B botulinus antitoxin was administered intravenously. March 4, the third day, she was unable to swallow liquids and became progressively worse. She received 1,000 cc. of 2.5 per cent dextrose in saline solution. March 5, the fourth day, she was able to speak a little more distinctly. March 6, the fifth day, she was able to take 450 cc. of fluids by mouth. Her vision improved also. March 9, the eighth day, she showed marked improvement. She was able to swallow with a little more success, felt stronger, and could speak and see much better. March 14, thirteen days after onset, she was discharged from the hospital, having obtained maximum benefit from her hospitalization and was allowed to convalesce at home.

CASE 5—Miss B., aged 23, who had practically tasted a slice of pepper, not desiring any more, stating that the peppers had a peculiar taste, did not develop symptoms until sixty-nine hours afterward. As a result of having had less of the contaminated food, she had the longest incubation period. She was admitted to the hospital on March 3. The following day she stated that she felt dazed and weak and that things appeared blurred before her eyes. Five thousand units of A and B antitoxin was administered intravenously, following a negative conjunctival and skin test. Eight hours after the serum her temperature ascended from 98.6 to 101, the pulse increased to 120 and respirations became 24. A drooping of the upper eyelids was observed. The pupils reacted to light and in accommodation. March 5, the fourth day, she received an additional 5,000 units of the serum. The day following this last administration of serum she showed a marked improvement. She appeared brighter and subjectively better. She had little difficulty in articulation and in taking fluids, however, the ptosis was still present. She also exhibited some sluggishness of tongue protrusion and lateral deviation. March 12, eleven days after the onset, she was placed on a soft diet.

Although weak, she stated that she felt considerably improved. On the thirteenth day she was discharged from the hospital as having sufficiently recovered for convalescence at home.

SYMPTOMATOLOGY AND DIAGNOSIS

The incubation periods varied from twenty-one to sixty-nine hours. The usual incubation period of this disease is from eighteen to thirty-six hours after the ingestion of the toxin, however, symptoms may appear as early as four hours and as late as four days after eating the poisoned food, according to some authorities on the subject. The symptoms manifested in this particular outbreak consisted of: 1. Blurred vision, diplopia, blepharoptosis and photophobia. 2. Lassitude and weakness, particularly in the muscles of the arms and legs. 3. Obstinate constipation. 4. Offensive breath. 5. Dysphagia. The patients also complained of a collection of thick, tenacious mucus in the pharynx, which they attempted to raise with considerable difficulty. 6. Inability to articulate, their tongues seemed thickened and moved slowly, producing unintelligible mumbling whenever speech was attempted. 7. Drowsiness. 8. Normal or subnormal temperature prior to the administration of the serum. 9. Vomiting in one case, followed by frequent eructations of gas. 10. Full possession of mental powers. During the entire course of their illness the patients were consciously aware of the gravity of the situation and dramatically pleading for salvation up to the last minute of respiration.

The diagnostic conclusion that the home canned peppers were responsible for the outbreak was arrived at by a process of elimination. The peppers constituted the only questionable article of food served that had been shared by every member of the family.

The manifestation of the clinical symptoms enumerated led to the establishment of an early diagnosis of botulism at the home of the patients, prior to hospitalization.

Treatment in general consisted of forcing fluids, catharsis, lavage, colonic irrigation, early hospitalization with complete rest in bed (exclusion of visitors), removal of mucus in the pharynx by gentle suction with a soft catheter and by wiping the throat frequently. Sedatives for restlessness and insomnia, special nursing care, cardiac and respiratory stimulants, and maintenance of respiration by means of oxygen and artificial respiration (Drinker respirator).

In addition, botulinus antitoxin A and B combined was administered to three of the patients, two having died before the serum was available. Of the three that received antitoxin, one died from bronchopneumonia, a complication that set in just prior to death, and the two survivors showed a marked improvement in all their symptoms following the use of serum, despite its unavoidably delayed administration.

LABORATORY EXAMINATIONS

Unfortunately, none of the peppers from the suspected jar consumed were obtainable. Specimens of other jars similarly preserved were secured for bacteriologic examination. When injected into guinea-pigs they produced no pathologic effects. No aerobic or anaerobic growth was present in any of these jars. The stomach contents of one of the patients was found to be negative for any of the heavy metals.

Another laboratory reported the following: 1. Toxicologic examination of the stomach contents and of a jar of pickled peppers was found to be negative for volatile mineral, nonvolatile organic and alkaloidal

poisons 2 Cultures of the pickled peppers were found to be negative Cultures of the stomach contents produced luxuriant, anaerobic growths but no *Bacillus botulinus* and had no effect on guinea-pigs, when injected

The third laboratory (state department of health) also reported negative results for *Bacillus botulinus* and for the toxin of these bacilli

In only a few cases out of many outbreaks of botulism has the laboratory been able to demonstrate positive evidence substantiating the clinical diagnosis

NECROPSY

The following is a necropsy report of the first victim

The body was that of a small, well developed stocky white man, bald headed, with gray hair There was an incision, well healed in the right upper quadrant, about 5 inches in length Rigor mortis had set in

The skull cavity showed no hemorrhage There was some oozing of the cerebrospinal fluid, which was clear when the brain was removed There was slight edema and softness of the brain tissue

There was no free fluid in the thoracic cavity The lungs were markedly congested, showing chronic passive congestion No consolidation or hemorrhage was noted

The heart was dark and seemed normal, outside of a chronic passive congestion

The abdominal cavity had marked adhesions to the abdominal scar, especially in the omentum The stomach was fairly well dilated and full of foul greenish gray contents which had a peculiar foul odor Part of the contents were saved for chemical examination The stomach had a gastro ileostomy hook-up of the posterior type, one portion of the stomach being about 9 inches from the cecum, so that obviously food must have passed from the stomach into the large intestine very rapidly

The appendix was missing When the stomach was opened the mucosa showed marked hemorrhages throughout although there were no ulcerations the hemorrhages were worse at the cardiac end of the stomach The small intestine was full of thick mucus and was congested The liver was small, turgid in color showed marked chronic passive congestion, and was soft The spleen was very soft, was of about average size and the pulp scraped off readily It seemed to act like jello The kidneys were turgid and congested the cortex was of about average size and the capsule stripped readily The bladder was not remarkable The pancreas was very soft and hemorrhagic

Gross Pathologic Examination—The heart showed moderate atheromatous changes in the mitral and aortic valves The lungs showed intense congestion

The stomach contained submucosal hemorrhages in the region of the fundus

The kidneys contained an excessive amount of pelvic fat The parenchyma was congested but the markings were distinct The spleen was fairly dry and fibrous

The liver showed no gross changes The small intestine showed an excessive amount of mucus covering the mucosa

The brain showed mild pial congestion but otherwise the surface appeared normal Sections of the cerebral hemispheres midbrain pons dura and cerebellum showed no gross abnormality Microscopic sections were taken of the cortex and the anterior quadrigeminal body

Microscopic Pathologic Examination—The stomach showed no pathologic changes

The liver showed moderate infiltration of the central cells with pigment there was chronic passive congestion No changes were noted in the heart

Peculiar pigmentary deposits were scattered throughout the kidneys Some cloudy swelling of the tubules was present

The lungs showed marked congestion and edema

Sections of the brain showed the blood vessels to be clear There was no inflammatory reaction There was a slight increase in the oligodendroglia and the neuron cells showed mild disorganization of the tigroid substance and the nuclei were occasionally eccentric

Summary—1 Acute toxic poisoning 2 Chronic passive congestion of all organs 3 Hemorrhage into the stomach
Impression Toxic neuronophagia
The poison seemed to come from the toxin of the bacillus of botulism

SUMMARY

1 A diagnosis of botulism was made on the presentation of a history of having consumed a jar of home canned peppers (having a peculiar taste), and on the basis of the clinical symptoms characteristic of the disease

2 The clinical diagnosis of botulism was substantiated by the necropsy report

3 The symptoms of the disease manifested themselves in proportion to the quantity of toxin ingested One of the survivors, who had the least amount of the contaminated peppers, had the longest incubation period

4 The symptoms were those of a profound systemic toxemia, characterized by oculomotor disturbance, drowsiness, weakness, and disturbance in the secretions of the throat

5 An early recognition and diagnosis of botulism intoxication is extremely important When the diagnosis is established, botulinus antitoxin should be administered as early as possible Five thousand units of type A and B, to be repeated as often as is necessary, should be given intravenously Despite the delayed administration of serum in this particular outbreak, there appeared a marked change of improvement in all the symptoms of the two survivors

6 Death apparently occurred from respiratory paralysis due to the action of the toxin in the cells of the central nervous system

7 Botulism should be differentiated from food poisoning The latter has a shorter incubation period and, while the symptoms are alarming, the mortality is low In botulism the symptoms are severe and the mortality is high

8 The necropsy report revealed a toxic neuronophagia and a chronic passive congestion of all organs

9 Botulism is far more common in the Pacific Coast states This outbreak is one of a few that have occurred in the East

10 There are only two other cases on record in medical literature of botulism caused from home canned peppers These cases occurred in California and proved fatal

11 Although convalescence is extremely slow, the two survivors manifested no permanent disability from this disease and have fully regained their former condition of health

COMMENT

1 The control of similar outbreaks of botulism can be brought about only through an accurate recognition of the symptoms and an immediate report of cases

2 Measures should be taken to have botulinus antitoxin immediately available when needed, as a means of offering each patient the maximum hope of recovery

3 Prevention of botulism should consist in a widespread campaign of education relative to proper methods of the home canning of vegetables and fruits

4 The extremely high mortality of botulism is a challenge to medical science and deserves continued investigation and research Perhaps consolation for the slow rate of progress in the scientific knowledge of this disease may be found in the words of the poet "Whither we cannot fly, we must go limping"

Veterans Administration Facility

FEVER THERAPY FOR GONOCOCCIC
INFECTIONS II

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It has become a sort of fashion, among those who write about the therapeutic value of heat, to trace it back to the Romans and the Greeks. What a tremendous burden of responsibility has been thrown on the Romans and the Greeks for so many things sacred or profane! During the height of the Roman Empire there were, in Rome proper, a large number of public bathing establishments, some of which were enormous and imposing institutions, such as the baths of Caracalla and those of Diocletian. The baths of Caracalla, for instance, occupied a building almost 1,200 feet square. In this mammoth structure were a series of pools, in each of which the water was kept at a different temperature from hot to cool, in each pool the temperature of the water was maintained by special heating arrangements. Besides these pools there were rooms for epilation, for massage and for various other procedures. It was the fashion at that time, among the young bloods and gay sophisticates of Rome, to go to these bathing establishments for a hot bath and rub, followed by epilation and by anointment with various aromatic and cosmetic preparations, after which they went forth resplendent and smelling as one does when one leaves certain barber shops. Practices such as these can hardly be looked on as therapeutic procedures, they smack altogether too much of ordinary hygiene and cosmetic efforts, with emphasis on the latter. In any event, the use of heat under these circumstances was entirely empirical and can hardly be dignified by the name of heat therapy.

The empirical use of heat for relief of various human ailments is as old as the human race. More than 4,000 years ago the Chinese used heat extensively and with about as much knowledge as the Romans. The only difference between the two was that the Romans made such practices fashionable and popular and provided for them in numerous, elaborate and imposing edifices.

In Japan, since about 1700, the famous natural springs of Kusatsu have been used for the empirical treatment of syphilis, arthritis, gout and many other disorders. The water in these springs issues from volcanic formations at temperatures varying from 37.7 to 71.1 C (100 to 160 F). For convenience, small individual tanks are placed in the pools and, if the water happens to be too hot for a particular bather, he stirs it with a large wooden paddle until he thinks it is cool enough to bear. Then he immerses himself up to the neck and remains in this hot water as long as possible, usually this is a matter of from three to six minutes, when he emerges looking almost like a boiled lobster. Such immersions are repeated several times a day and are continued for from three to five weeks. Distinctly beneficial results are often observed. But again the procedures surrounding the use of heat under these conditions are clearly empirical.

True fever therapy, as it is now understood, originated with Wagner-Jauregg, who made it known in

1918. It was he who found that inoculation with malaria of a patient suffering from dementia paralytica is often followed by improvement or complete remission of symptoms. Since then, malarial therapy has had a considerable vogue. In the hands of some the results have been excellent, in the hands of others the results have not been so good. This variation in results has probably been due to a number of factors, one of which undoubtedly has been the facility with which malarial therapy could be used under satisfactory conditions.

Since then, many other methods of inducing fever artificially have been employed. Among these may be mentioned injections of crystalloid or colloid substances, or of heteroproteins such as peptone, milk and casein. Others have injected vaccines prepared from paratyphoid micro-organisms or from *Haemophilus Duceyi* (dmelcos). These different methods, which are sometimes classified under the designation physiologic but which should perhaps more truthfully be classified under the designation pathologic, have been used with varying degrees of success. A number of objections have been raised against them. The most important objections have been the uncertainty of the resulting fever and the difficulty of regulating the fever. For these reasons, many physicians have continued to seek more satisfactory methods of raising the temperature of patients for therapeutic purposes.

Among the various physical methods that have been tried may be mentioned hot baths, diathermy, short-wave diathermy, radiant light (infra-red generator or carbon filament lamps), inductotherapy, and air-conditioned chambers. Hot baths can be used effectively when the period of fever need not be long, but when it is desirable to maintain the fever for an extended period (several hours) this method becomes a distressing and debilitating experience for the patient and is difficult to use satisfactorily. Diathermy has been found effective. This method requires the application to the patient of large ventral and dorsal electrodes, which must be carefully maintained in contact with the skin over a large area. This involves the use of a large jacket, which is firmly laced around the patient in order to maintain the required contact between the electrodes and the skin. Even with such a jacket, however, contact may be broken by movements of the patient, and burns may result. Moreover, the method makes it impossible to keep the skin beneath the electrodes under observation. Another objection is that the fairly tight lacing of the jacket gives the patient a sense of constriction and respiratory oppression that is decidedly uncomfortable. Short-wave diathermy has been used with considerable success, especially in Europe, although its therapeutic possibilities were first recognized in this country. Until simpler and more effective means became available, simple diathermy and short-wave diathermy were the best methods of inducing fever. The use of short-wave apparatus, however, cannot be described as a simple procedure. The apparatus itself is somewhat complicated and its operation is fraught with various technical difficulties,¹ such as the tendency of the current to arc to pools of perspiration and the constant necessity of causing the perspiration to evaporate from the skin as rapidly as it is formed. This requires more or less elaborate accessory equipment.

From the Section on Therapeutic Radiology (Dr. Desjardins and Dr. Popp) and the Section on Urology (Dr. Stuhler) the Mayo Clinic.

1 This does not apply to the use of short wave apparatus for local heating only. Also in apparatus of this type manufactured in Europe some of these difficulties have been partly eliminated.

Radiant light fever chambers are being used with more or less satisfaction. One point in their favor is that they are less expensive than certain other types of apparatus designed for this purpose. A disadvantage, however, is that, with most chambers of this type, the elevation of temperature is rather slow. In treating certain conditions which require that a high temperature be maintained for several hours, undue slowness in inducing fever becomes an important objection, because the patient becomes fatigued before his temperature has risen to the level at which it is to be maintained.

Of the different types of physical apparatus thus far designed for fever therapy, the one which appeals to us as the most effective from all points of view is the air-conditioned chamber known as the Kettering hypertherm. With this chamber the temperature can be raised more rapidly than with radiant light chambers and any degree of fever can be attained and maintained for as long as the condition of the patient allows or requires. Moreover, the patient's body (except the head, which is outside) is entirely free within the chamber, and the apparatus does not involve the use of contact electrodes, condenser plates or other electric gadgets of any kind.

AIR-CONDITIONED FEVER CHAMBER (KETTERING HYPERTHERM²)

This chamber (fig 1) consists of a rectangular box about 6 feet long, 30 inches high and 36 inches wide, mounted horizontally on long legs and divided into two unequal parts: one, the main compartment occupied by the patient, is large enough to accommodate the trunk and extremities, the other is a small, shallow compartment at the foot of the chamber and separated from the main compartment by an asbestos partition, in which is a small, open grill, in this smaller compartment is mounted the simple mechanism designed to heat and humidify the air as well as to force it to circulate through the chamber proper. The ceiling of the chamber is double, and the anterior third of the inner layer of the ceiling contains a large number of holes, through which the heated and humidified air furnished by the generating mechanism penetrates the main compartment of the chamber and circulates around the patient. The floor of the chamber also is double, and its inner layer constitutes a bed which, moving smoothly on brass rollers, can be rolled into the chamber or withdrawn from it with little effort. The bed is covered with a comfortable air mattress. The two legs supporting the head end of the chamber are double, and one set, forming an integral part of the rolling bed, is fitted with casters to facilitate the inward or outward movement of the bed.

At the head end of this bed is a projecting shelf, which remains outside the chamber when it is closed and on which rests the head of the patient. This end of the chamber can be closed by means of a vertical panel which, sliding in metal grooves at each side, can readily be lowered or raised. Once closed, this panel is firmly held in place by two large hand screws. One turn of these screws permits the panel to be quickly raised, and the patient can thus be withdrawn from the chamber in five seconds. In the center of the lower border of the vertical panel is a rather large and deep, circular indentation that surrounds the patient's neck. Within this main indentation is fixed a piece of sponge rubber, in which a smaller, secondary indentation fits loosely around the neck. In order to provide for variations in the size of the neck of different patients, and to prevent the escape of air, which would reduce the efficiency of the apparatus and interfere with treatment, the space between the rubber and the neck is loosely packed with a towel.

The side walls and ceiling of the chamber are made of heavy celotex, while the floor is made of wood. It is essential that the chamber should be as air tight as possible.

The thermogenic mechanism consists of a small electric air heater, with three units, this is controlled by external switches which make it possible to use one or all three units at will, and also by a thermostat which permits one to regulate the temperature of the air within the chamber, and a pan of water heated by two small electric elements, the heating of the water for humidification being regulated by an automatic humidistat. But, in order to avoid uncertainty about the degree of humidity, this factor is verified by dry and wet thermometric readings. The data thus obtained permit the exact calculation of the degree of humidity. The heated and humidified air thus produced is then forced by an electric blower between the two layers of the ceiling of the chamber, whence it enters the main compartment through the holes in the anterior portion of the inner layer of the ceiling, circulates around the patient about ten times a minute, and returns to the heating and humidifying mechanism through the grill in the partition that separates the patient from the mechanism.

By means of panels sliding in metal grooves at each side, it is possible to keep the patient's skin under observation, to take the blood pressure as often as may be necessary, and to take the rectal temperature every few minutes. Moreover, in case of emergency the patient may be withdrawn from the chamber in a few seconds. These undoubtedly are advantages which are not provided for to the same degree by any other method or apparatus with which we are acquainted.

Later, it is possible that more simple and less costly apparatus may be conceived and constructed. For example, chambers with infra-red elements or carbon filament lamps, or apparatus incorporating the principle of inductothermy, may be perfected so as to do away with the present disadvantages. But however simple the thermogenic methods may become, it is doubtful whether fever therapy, especially for diseases of which the treatment requires that a high temperature be maintained for hours, will ever be an office procedure.

An essential point is that, throughout a session of treatment, the patients must be under the constant observation of specially selected and trained nurse-technicians and that the technical personnel should be constantly supervised by a physician familiar with all

² This apparatus was conceived and perfected at the Miami Valley Hospital and at the Research Laboratories of the Frigidaire Division of the General Motors Corporation, Dayton, Ohio, by Dr. Walter M. Simpson with the collaboration of Mr. Charles T. Kettering, director of the Research Laboratories of the General Motors Corporation, and Mr. Edwin C. Sittler of the Research Laboratories of the Frigidaire Division of the General Motors Corporation. The apparatus is not on the market and because of the danger of unscrupulous exploitation, probably never will be as far as outright sale is concerned. At present a smaller, simpler and less costly apparatus is being developed. If later its wider distribution should seem desirable, the apparatus will probably be leased on a loan-lease basis to selected institutions. Fifty five of the units have been lent to twenty medical research centers, strictly for investigative purposes. The production and maintenance of artificial fever therapy at high temperature is not adaptable to ordinary office practice. The physicians and nurses charged with this undertaking received special training in the Department of Fever Therapy Research at the Miami Valley Hospital before the apparatus was released. Adequate preliminary training of physician personnel and nurse personnel is an essential requirement for this type of work. We are indebted to Dr. Simpson and Mr. Kettering for the privilege of using this apparatus. Four hyperthermia sessions are now in constant operation at the Mayo Clinic.

phases of the method. The technicians are not allowed to leave the patient until the session of fever has been completed and until the temperature has returned to normal. If a technician must absent herself momentarily, her place is taken by another technician or by the supervising physician. Lunch for doctor and nurses is served in one of the treatment rooms or in the office. Under such conditions, and if the patients are carefully selected, only minor complications are likely to occur. Slight circulatory incidents (pulse), gastro-intestinal disturbances (nausea and vomiting), or muscular tetany (hands, feet or abdominal wall), may occur in a few cases, but, rapidly arrested by appropriate measures, they do not interfere with treatment.

GENERAL CONSIDERATIONS

Those who attended the twenty-third French Congress of Medicine, held at Quebec in August 1934,

specially trained team remove practically all danger of serious complications and make possible the cure of a high percentage of acute or chronic gonococcal infections of the urethra, epididymis, cervix and body of the uterus, fallopian tubes and joints, and this within a period which may vary between two and four weeks but which, in the majority of cases, varies between two and three weeks.

When the treatment was given with the thermogenic means available at the time (simple diathermy or short-wave diathermy), we agree with Halphen and Auclair that the procedure was really tedious and exhausting, and that the results were uncertain and far from striking. But that period of trial is over. Now it is possible to cure most patients who have simple gonorrhea or gonorrhea complicated by epididymitis, metritis, salpingitis or arthritis, whether the infection is acute or chronic. And the certainty of cure is such that, if

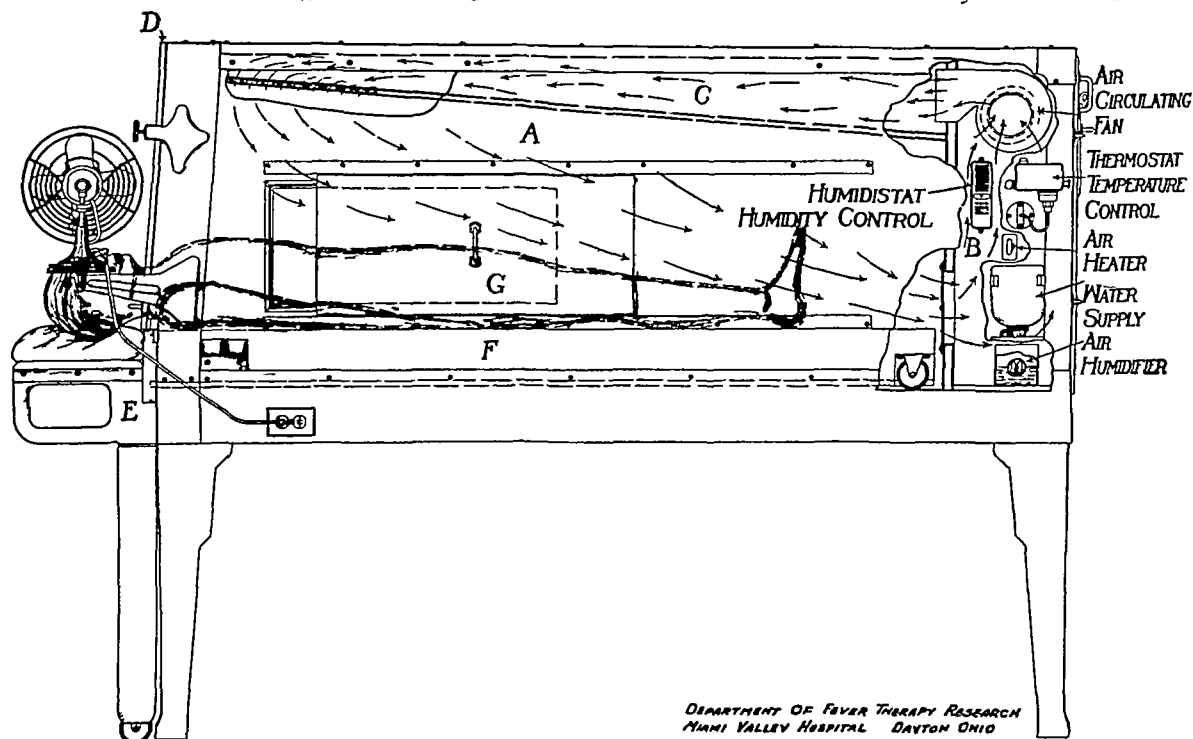


Fig. 1—Diagram of the Kettering hyperthermia. A the main compartment B the small compartment at the foot end of the chamber in which is mounted the mechanism for heating and humidifying the air and causing it to circulate through the main compartment C the air channel between the two layers of the ceiling D the vertical panel which closes the chamber during sessions of treatment E the external projecting portion of the rolling bed on which rests the head of the patient F the rolling bed on which the patient lies G one of the sliding panels at the side of the main compartment which permits constant observation of the skin the determination of rectal temperature pulse and blood pressure and general care of the patient

heard the interesting reports of Richet, Roger, Fribourg-Blanc, Halphen and Auclair, and Bessemans, on the biologic agents suitable for inducing fever therapy for certain diseases of the nervous system, for infections and diseases of nutrition and of the blood, for syphilis, and on physical methods of thermogenesis. In their report, Halphen and Auclair mentioned fever therapy for acute gonorrhea and gonococcal arthritis in the following terms: "It is a tedious and dangerous procedure, hardly in keeping with the relative benignity of the disease or with the results obtained, at least in man." At the time this judgment was pronounced it was approximately accurate but at the present it is no longer valid. Although fever therapy at high temperature may be somewhat tedious, the improvement of physical thermogenic apparatus, the judicious selection of patients, and a painstaking technic carried out by a

a patient returns three or more weeks later and tries to make us believe that a fresh discharge is evidence of recurring infection, we know that this is not true and we always succeed in making the patient admit a recent sexual indiscretion.

If a few cases of gonococcal infection prove rebellious to treatment, this is because certain strains of gonococcus can tolerate a temperature of from 41.1 to 41.7 C (106 to 107 F) for a longer time than can certain patients. Fortunately, the number of such cases is small. Another reservation must be made. In certain women suffering from gonorrhea complicated by infection of Skene's glands, that part of the infection which involves the urethra, uterus, tubes or articulations rapidly disappears under the bactericidal and resolving influence of a sufficiently high temperature maintained for from six to ten hours and repeated three or more

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times at intervals of two days. But to cure the infection of Skene's glands it is sometimes necessary to cauterize these structures.

GNOCOCCIC INFECTION

Bactericidal Action of Heat on the Gonococcus—Antecedent reports of cases are often interesting and sometimes throw light on certain questions. Thus, Bogdan³ recorded a case of gonorrhea in which the urethral discharge ceased during a pneumonia but reappeared after the fever had subsided. Finger, Ghon and Schlagenhauser⁴ found it impossible to induce urethritis by injecting gonococci into the urethra of a patient whose temperature varied between 39 and 40 C, while urethritis always supervened after similar injections into patients without fever. Guiard⁵ reported a case of gonorrhea in which the urethral infection disappeared spontaneously during an attack of scarlet fever. Neisser and Scholtz⁶ testified to a constant difficulty in cultivating the gonococcus from febrile patients. Luys⁷ made a similar observation in a case in which the temperature, during an attack of mumps, rose to 40 C. Culver⁸ had the same experience, a urethral infection disappeared in the course of an attack of malaria lasting four days, in the course of which the patient's temperature rose to 40.5 C. Culver claimed that a sudden rise of temperature to 39 C suffices to destroy the gonococcus. However, the observations of Nobl⁹ and of Nicoll¹⁰ do not seem to corroborate Culver's assertion.

Bacteriologists have long known that the gonococcus can best be isolated and cultured at a temperature of 37 C and that the organism does not grow so well at a temperature higher than 38 C. Steinschneider and Schaffer¹¹ noted that a temperature between 40 and 41 C, maintained for a few hours, is sufficient to destroy the gonococcus. Wertheim¹² claimed that the organism grows well at 40 C and may even tolerate a temperature of 42 C, but his results were not confirmed by those of other investigators. Santos¹³ succeeded in isolating the gonococcus from pus that had been subjected to a temperature of 45 C for forty-five minutes. By heating the male urethra by means of diathermy, on the other hand, Boerner and Santos¹⁴ could not isolate the organism

after ten hours of temperature at 39 C, three hours at 41 C, and fifty-seven minutes at 41.7 C. Ylppo¹⁵ treated a vulvovaginitis of a girl, aged 5 years, by means of hot baths, beginning with a temperature of 39 C and increasing the temperature of the water to 41.5 C. After eight daily baths, each lasting one hour, Ylppo could no longer isolate the gonococcus. Ungermann¹⁶ found that certain strains of gonococcus can withstand a temperature of 41 C for ten hours and that a few strains may even tolerate a temperature of 52 C for seven hours.

Koch and Cohn¹⁷ were of the opinion that the gonococcus can tolerate a high temperature in vivo more readily than in vitro. This opinion was based on the fact that, in the course of an acute infection in man, gonococcal infection can resist a temperature of 40 C for several days. These different observations and results give an impression of divergence but, when they are analyzed in relation to the degree of temperature and to the duration of temperature, the impression of divergence diminishes. The remaining portion, which

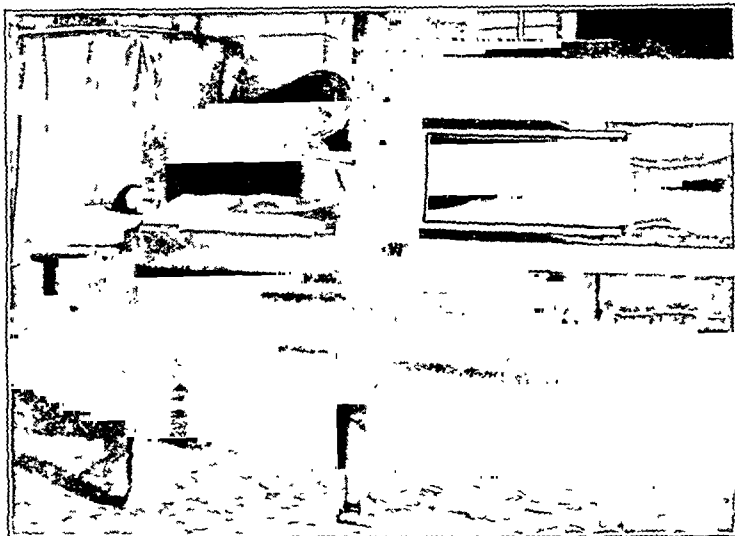


Fig 2—The open chamber with a patient ready to begin a session of treatment (side panel open)

cannot be accounted for by these two factors, is probably due to the variable tolerance to temperature of different strains of gonococcus.

In spite of the apparent significance of the preceding observations, fever therapy for simple or complicated gonococcal urethritis owes still more to the investigations of Carpenter, Boak, Mucci and Warren,¹⁸ who undertook a systematic determination of the influence of heat on the gonococcus. Their specific aim was to determine the degree and duration of temperature that can be tolerated by man and are necessary to destroy this microbe. With this object in view, they subjected fifteen strains of gonococcus to temperatures of 39, 40, 41, 41.5 and 42 C. All the strains of gonococcus that they studied had been cultivated from one month

3 Bogdan M. Disparition d'un écoulement blennorrhagique pendant le cours d'une pneumonie. *Revue de l'écoulement après la guérison*. Arch de dermat et syph 4: 253 1893.

4 Finger E, Ghon A and Schlagenhauser F. Beiträge zur Biologie des Gonococcus und zur pathologischen Anatomie des gonorrhoischen Processes. Arch f Dermat u Syph 28: 3 1894.

5 Guiard F P. La blennorrhagie chez l'homme. *Historique bactériologie clinique. Traitements anciens et nouveaux*. Preface du Professeur F Guyon. Paris: Rueffet Cie 1894. p. 284.

6 Neisser A and Scholtz W. Gonorrhoe in Handbuch der pathogenen Mikroorganismen. Jena 3: 168 1903.

7 Luys C. Textbook on Gonorrhea and Its Complications. London: Baillière Tindall & Cox 1917. pp. 23-26.

8 Culver Harry. The Treatment of Gonorrheal Infections by the Intravenous Injection of Killed Gonococci, Meningococci and Colon Bacilli. J A M A 68: 362 (Feb 3) 1917.

9 Nobl G. Klinischer Beitrag zur Biologie der Gonococcen. Wien Klin Rundschau 16: 863 886 1901.

10 Nicoll M. Three Cases of Gonococcus Septicemia with Arthritis following Scarlet Fever. Arch Pediat 31: 804 1914.

11 Steinschneider and Schaffer. Zur Biologie der Gonokokken. Berl klin Wchnschr 32: 984 1895.

12 Wertheim E. Ueber das Verhalten des Gonococcus auf künstlichen Nährboden. Arch f Dermat u Syph 51: 139 1900.

13 Santos G. Resistance du gonococcus aux températures de 43° et 50°. Action directe des courants de diathermie. Arq do Inst bact Carriara Pestana 4: 211 1915.

14 Boerner R and Santos C. Ueber eine neue Art von Elektroden zur Behandlung der Gonorrhoe mittels Diathermie. Med Klin 10: 1062 1914.

15 Ylppo A. Ueber die Fieberbehandlung der Vulvovaginitis gonorrhoeica bei kleinen Mädchen. Therap Monatsb 30: 580 1916.

16 Ungermann F. Eine einfache Methode zur Gewinnung von Dauerkulturen empfindlicher Bakterienarten und zur Erhaltung der Virulenz tierpathogener Keime. Arb a d k Gsndtsamte 51: 180 1919.

17 Koch J and Cohn A. Gonokokkeninfektionen in Kolloid W Kraus R and Uhlenhuth P. Handbuch der pathogenen Mikroorganismen 4: 705 1928.

18 Carpenter C M, Boak Ruth A, Mucci L A and Warren S L. Studies on the Physiologic Effects of Fever Temperatures. J Lab & Clin Med 18: 981 990 (July) 1933.

to twelve years. The ability of the different strains to withstand the temperatures mentioned varied considerably. The cultures isolated ten or twelve years previously tolerated heat for a longer time than the recent cultures. In spite of this variation in tolerance, 99 per cent of the gonococci could not withstand a temperature of 41 C more than four or five hours, but 1 per cent was not destroyed until this temperature had been maintained for twenty-three hours. When subjected to a temperature of from 41.5 to 42 C, 99 per cent of the gonococci were destroyed in two hours, but 1 per cent had to be heated at 41.5 C for from seven to twenty hours, or at 42 C for from five to fifteen hours, to effect their destruction. It is to these thorough investigations of Carpenter, Boak, Mucci and Warren that we owe the possibility of rapidly curing gonococcal infection. At present the gonococcus is the only micro-organism of which the lethal temperature has been determined and which can be tolerated by human beings. It is possible that the future may furnish equally favorable data on other bacteria, in this event the field of therapeutic hyperpyrexia will be correspondingly extended. By this it is not intended to imply



Fig. 3—The chamber closed and a session of treatment started. The fan blows cool air around the patient's head and the technician passes over the patient's face towels dipped in ice water.

that fever therapy has no other basis than a knowledge of the temperature necessary to destroy other bacteria effectively and cure other diseases. Far from it. But in those other diseases one must depend on the indirect effects of heat, while in gonococcal infection the cure is mainly, if not wholly, a question of degree of temperature and duration of temperature, consequently, the principal, and perhaps the entire, effect is direct and specific.

CONTRAINDICATIONS

Advanced age with its cardiovascular changes, and organic lesions of the heart at any age, are outstanding and more or less formidable handicaps to fever therapy. Functional disorders of the heart may or may not interfere with treatment. Severe renal disturbances also may make effective fever therapy difficult or impossible but, on the whole, they interfere with treatment less than cardiac or cardiovascular disturbances. Pulmonary tuberculosis per se is not a contraindication, but the resulting impairment of respiratory function may make it impossible to raise the patient's temperature to the required level or to maintain it at this level for a sufficient period. When diabetes is under satisfactory clinical control, fever therapy is not contraindicated.

TECHNIC

The patients are first submitted to a general examination in order to eliminate those whose cardiovascular or renal condition might contraindicate fever therapy. In those cases in which the clinician may be slightly uncertain, electrocardiography and a functional examination of the vessels serve to clarify the situation. If the condition of a patient still remains in doubt, he is subjected to a trial session of fever therapy and, if this is well tolerated, the treatment is continued until the disease is arrested. As a matter of fact, the number of cases with definite contraindications is small. In general, the age of gonorrhea is the age of physical vigor. It may occasionally happen that a person 60 or more years of age may succumb to temptation, and this indiscretion may have a rather introspective sequel, so to speak, but such cases are exceptional.

After having been weighed, the patients, completely undressed but temporarily covered with a bath robe, enter the chamber at about 8 o'clock in the morning, without breakfast. The chamber is already warm, the mechanism having been run for about half an hour. The feet and legs are covered with boots of cotton and gauze to prevent the concentration of heat at the toes and around the bony prominences of the ankles (fig. 2). The blood pressure is taken and the chamber is closed. The indentation in the piece of sponge rubber fixed to the lower border of the vertical panel is adjusted around the patient's neck and, in order to prevent excessive leakage of air, a towel is loosely stuffed into the space between the neck and the sponge rubber. The bath robe is then removed from the patient and the session begins.

The temperature of some patients rises to 41.1 C (106 F) in sixty minutes, in other cases such a rise in temperature may require from seventy-five to ninety minutes. At the outset and as long as the rectal temperature does not exceed 40 C (104 F) the temperature is taken every fifteen minutes, but beyond 40 C (104 F) the rectal temperature is taken every five or ten minutes.

Certain authors have advocated the use of a recording electric thermometer, with a thermocouple in the rectum. We have tried instruments of this kind, but they have an appreciable and disconcerting lag. Every mechanical instrument is subject to breakdown, which may be all the more serious because the personnel naturally tends to rely on its automatic operation. Moreover, when a nurse is given a dial or scale to watch and is instructed to govern her actions by its indications, her attention is focused on the dial or scale rather than on the patient. Our experience with recording thermometers has led us to prefer an ordinary thermometer, because of its greater reliability but also because the manual method of taking the temperature gives the technician an additional opportunity to watch the patient.

At the beginning of each session of treatment, when the temperature passes from 39 to 40 C (102.2 to 104 F), one often observes a period of mild excitement, which has been called the "hurdle" and which probably is a defensive reaction of the body to the accumulation of heat. Once this physiologic hurdle has been passed, the patient becomes more quiet and may go to sleep, while the temperature rises rapidly. If the patient is nervous, pentobarbital sodium or codeine is adminis-

tered to help him over the "hurdle" In order to make the sessions less tedious and uncomfortable, a well protected electric fan blows fresh air around the head of the patient, and throughout the sessions the technician passes over the patient's face and head towels dipped in ice water (fig 3). True delirium rarely occurs. When the temperature is between 41.1 and 41.7 C (106 and 107 F), certain nervous patients show a certain degree of excitement. Usually codeine or sodium amytal suffices to quiet them. Just as important and

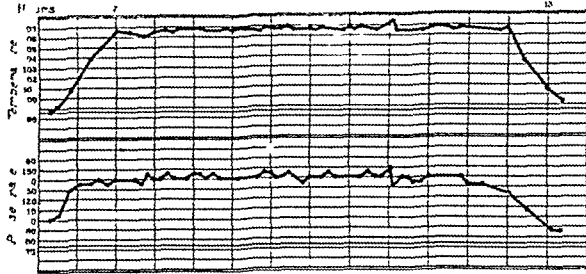


Fig 4—Chart of temperature and pulse throughout a ten hour session of fever between 106.5 and 107.2 F

effective is the influence of the technician who knowing her patient, reads, tells stories or allows him to sleep, according to the psychologic indications. This is one of the reasons why the technicians should be carefully chosen, they must be able to adapt themselves to the temperament of their patients, some of whom may be simple and phlegmatic farmers, while others may be cultured, sophisticated or neurotic individuals. Morphine is used as little as possible, because of its well known tendency to induce nausea and vomiting. However, in certain patients who without it, would be difficult to control, a limited use of the drug is made.

Skill in fever therapy is shown by the ability of the technician to maintain the temperature of a patient within one degree at any level, but, in the case of gonococcal infections, between 41.1 and 41.7 C (106 and 107 F), such skill requires intelligence, thorough training and experience. A superior technician can often keep the temperature between 41.4 and 41.7 C (106.5 and 107 F) for ten or more consecutive hours (fig 4).

An observation that is interesting but without significance may be mentioned. Between 11:30 a.m. and 1 p.m. many patients exhibit a mild degree of agitation. This is probably due to the habit of the stomach of being fed at this hour. When this phase of agitation appears, a sedative is given and quiet is soon restored.

As the temperature rises the patient perspires more and more freely and if appropriate measures were not taken loss of weight (from 1 to 5 pounds, from loss of water) and pronounced weakness for several days (from loss of chlorides) would result. To prevent these complications, the patient is made to drink throughout each session of treatment from 2 to 5 liters of 0.6 per cent saline solution (iced). After the temperature has risen above 40 C the majority of patients no longer taste the salt and do not object to it; on the contrary, they continually ask for more. In some cases in which the taste of salt persists and is unpleasant to the patient salt water is alternated with fresh water. With this regimen the weight of most patients, instead of falling, increases from 1 to 5 pounds, and the ensuing weakness is not only less pronounced but lasts only twelve

to twenty-four hours (fig 5). Of 100 patients weighed before and after treatment, the weight of seventy-nine had increased by from 1 to 5 pounds, the weight of twenty patients had diminished because, for various reasons, they had not taken a sufficient quantity of saline solution. Many of these patients had been treated in the early phase before we had learned to prevent or to control nausea and vomiting.

During each session of treatment the condition of the skin frequently is observed and if an area of erythema appears, it is first covered with a towel in order to prevent the direct impact of hot air. If, as sometimes happens this is not sufficient, the erythematous area is covered with a piece of ice for fifteen or thirty minutes, and the erythema usually subsides. These measures make it possible to avoid burns. In a few cases however, small vesicular burns may result from a local deficiency of the sudoriferous glands or blood vessels, but frequent and careful examination of the skin enables one to prevent them or to make them insignificant. If the temperature of a patient is allowed to rise too rapidly, the skin may not have time to adapt itself and may show signs of overheating. Also, the skin of some patients is more sensitive than that of others. On this account, at the first session or two, it may be difficult to raise the temperature to the required level. When the difficulty arises from a tendency to diffuse erythema from an extensive functional inefficiency of the sudoriferous system, the problem may solve itself. One or two sessions of moderate fever may so increase the functional capacity of the perspiratory mechanism that more effective treatment may subsequently become feasible. In a few cases in which the skin is exceptionally sensitive, it is sometimes

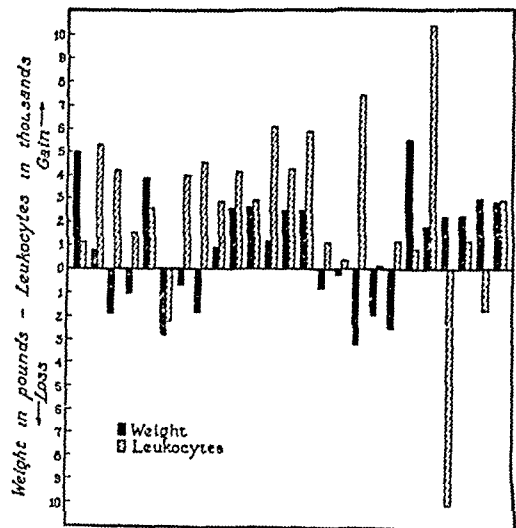


Fig 5—Chart showing that the weight of the majority of patients increases during a session of treatment and that there is no connection between weight and number of leukocytes per cubic centimeter of blood

necessary to bandage the extremities. Because of the tendency of heat to concentrate on small parts, the skin of the extremities usually is more sensitive than that of the trunk. The skin of the female also is more sensitive than that of the male, although this rule is not absolute; exceptions are not rare.

The rate at which the temperature rises is related to the sensitiveness of the skin, the cutaneous distribution and function of the sudoriferous glands, and the

functional activity of the heart and lungs. In two cases we have observed that, even at a temperature of 39.3 C (102.7 F), there was no evidence of perspiration, the skin was excessively red and dry, and the patients complained bitterly. In such unusual cases it is important not to force matters, under penalty of a serious accident. It is wise to proceed more slowly. At the first session, as soon as the functional deficiency of the skin becomes apparent, too rapid a rise in temperature is to be avoided so as to permit the skin to adapt itself to the new conditions. If, nevertheless, the skin shows itself unable efficiently to dissipate the heat brought to the surface by the blood, the patient's temperature should not be allowed to rise above 39 or 39.5 C (102.2 or 103.1 F). Such conduct during the first session or two of treatment is usually rewarded by functional improvement of the skin and subsequent sessions may proceed normally. The temperature of the same patients may then be carried to 41.1 C or even to 41.7 C without further difficulty.

At the first session of treatment, regardless of the behavior of the skin, it is unwise to allow the temperature to rise above 106.5 F (41.4 C) at any time. Not only the skin but the heart, lungs and blood vessels should be given an opportunity to adapt themselves to the treatment, these structures should not be exposed suddenly to the undue functional stress of a temperature higher than that mentioned. In other words, the first session should always be regarded as a test session, and the ability of the patient's cardiovascular, respiratory and cutaneous systems to tolerate a high temperature should be closely observed. If this is not done, serious complications may occasionally arise.

Food is not permitted during the sessions of treatment but, as soon as a session has been completed and the patient's temperature has returned to normal, the patient is given as much milk as he will drink and is urged to take more milk at frequent intervals during the ensuing twenty-four hours. Sometimes a patient may violate the rule of going without breakfast, but the nausea and vomiting which usually follow soon convince him that the rule was not made without a good reason. Sometimes, especially in female patients, nausea and vomiting may occur in spite of abstinence from food on the morning of a session of treatment. This difficulty is rapidly corrected by injecting into a vein from 500 to 1,000 cc of a solution containing 10 per cent of dextrose and 1 per cent of sodium chloride, and the session need not be interrupted. If this difficulty were not so readily corrected, the patient would be unable to take a sufficient quantity of saline solution and the treatment would probably have to be interrupted. In the majority of cases, however, nausea and vomiting occur after the session of treatment has ended and probably result from overfilling the stomach with saline solution at some stage of treatment. Spontaneous evacuation of the mass of liquid usually terminates the disturbance.

How Do Patients Tolerate a High Temperature for Several Hours?—The majority of patients tolerate the treatment quite well, and their behavior is a faithful reflection of the character and temperament of the individual. The poised person, who is determined to get well as rapidly as possible, behaves accordingly. Some patients hum, sing, smoke, or amuse themselves by teasing the technician. Some remain quiet and sleep much of the time. Others, with less will power or whose

nervous system is less stable, complain more or less. Certain nervous individuals, persons without will power or fortitude, or those who have never known the meaning of self control, beg to be released from the chamber long before the session is scheduled to end. But, after one or two sessions, most patients become accustomed and their apprehension diminishes more or less. Naturally, the necessity of spending from six to ten hours at a temperature of 41.1 or 41.7 C (106 or 107 F) can hardly be described as a vacation sport, but there is a clear difference between a natural fever, such as that which arises from a spontaneous infection, and the hyperpyrexia produced by a physical method. The first may be accompanied by chills, while the last does not have any toxic factor and is free from chills. This is an essential distinction. All the physicians and nurses in the service have had a session of fever for personal experience and, before any patients are treated in a newly installed chamber, its operation is tested by our selves. The experience of a session of treatment is not at all terrifying.

How Many Sessions of Treatment Are Necessary to Cure a Gonococcal Infection?—In the majority of cases, that is in 90 per cent, from three to six sessions are required to cure the disease, and the cure is complete and permanent. In many cases smears of urethral pus do not reveal any gonococci, or attempts to culture the gonococcus are unsuccessful, after the first or second session of treatment but, in order to prevent all danger of recurrence, the patient is given two additional sessions. In some cases the smears and cultures do not become negative until after the third, fourth, fifth or even the sixth session, and in a few exceptional cases, in which the gonococcus is unusually resistant, a cure is obtained only after eight, ten or twelve sessions. In all cases, smears and cultures are prepared the second day after the second session of treatment. Until recently, the gonococcus could be cultured only with difficulty and considerable uncertainty, for this reason, smears were more reliable. But the method of culture recently devised by McLeod, Coates, Happold, Priestley and Wheatley,¹⁹ especially as simplified by Thompson,²⁰ has so well overcome the former obstacles that culture now is a more delicate and reliable diagnostic method than smears.

Duration of Sessions of Treatment—The duration of the sessions of hyperpyrexia varies according to the relative resistance of the gonococcus in each case. As we have already pointed out, the destruction of the micro-organism depends on two main factors: degree of temperature and duration of temperature. The relative importance of these two factors is approximately equal. If a sufficiently high degree of temperature (from 41.1 to 41.7 C, or 106 to 107 F) is not attained, if this degree of temperature is not maintained long enough (from six to ten hours), if the number of sessions is not sufficient, or if the interval between sessions is too long, the infection is not completely or permanently cured. Were it feasible to give the entire treatment in a single session, even if such a session had to be prolonged to ten, twelve or even twenty consecutive

19 McLeod J W, Coates J C, Happold J C, Priestley D P and Wheatley B. Cultivation of the Gonococcus as a Method in the Diagnosis of Gonorrhea with Special Reference to the Oxydase Reaction and to the Value of Air Reinforced in Its Carbon Dioxide Content, *J Path & Bact* 39: 221-231 (July) 1934.

20 Thompson Luther. A Simple Method of Supplying Carbon Dioxide in Jars for Bacteriologic Cultures. *Am J Clin Path* 5: 313-315 (July) 1935.

hours, the results would be equally good. Carpenter and Warren, at Rochester, N. Y., have adopted this mode of procedure, but in the majority of clinics and hospitals such a technic would be difficult or impossible.

At the beginning, in our service, the sessions of fever lasted five hours and were repeated only when the urethral or vaginal discharge reappeared, that is, after from three to seven days. It soon became evident that in many cases the sessions were too short and the interval between sessions too long. Since then the technic has been modified. At present the first two sessions are regarded as test sessions and last six hours, by which is meant six hours of temperature between 41.1 and 41.7 C (106 and 107 F). Since the phase of elevation of temperature varies between sixty and ninety minutes, and since the phase of return to normal at the end of each session is approximately as long, the total duration of the session varies from eight to nine hours. An interval of two days separates the two initial sessions as well as all other sessions. If, after the second session, the urethral or vaginal discharge has ceased, and if the smears and cultures no longer show gonococci, two sessions of the same length and at the same interval complete the treatment. But if, after the second session, the discharge continues, or if smears or cultures still disclose gonococci, the duration of the sessions is increased to eight hours (total duration, ten or eleven hours). Then, if one session of eight hours does not suffice to destroy all the gonococci, the subsequent session is extended to ten hours. Fortunately, such long sessions are rarely necessary, but it happens occasionally that, even after three sessions of ten hours (total duration, twelve to thirteen hours), and although the discharge may have ceased for one or two days, the smears and cultures still contain active gonococci. If, in such cases, the duration of the sessions of hyperpyrexia could be prolonged to twelve or even fifteen hours, a cure would still be possible. If, on the contrary, the patient's condition does not permit, or if the patient refuses to submit to such long sessions, the infection continues or returns. We have had such an experience in only three cases.

Action of Fever Therapy on Cardiac Function—

The pulse rate increases rapidly at the beginning of each session of treatment, that is, throughout the phase of rising temperature. Then the pulse rate tends to stabilize itself, but the level of relative stabilization varies considerably. In some cases the pulse rate increases to 120 beats a minute and then oscillates at about this level during the remainder of the session. This is commonly seen in the more or less phlegmatic patient whose nervous system is stable. In other cases the pulse rate increases to 140 or 150 beats a minute and becomes stabilized at this level, in such patients the amplitude of oscillation tends to be greater. This is frequently noted in the patient whose nervous system is unstable and who easily becomes agitated. Between these two extremes there is a wide variation in reaction of the cardiac mechanism. If, during a session of treatment the pulse rate rises to 160 beats a minute, this is regarded as a signal of potential danger and the patient is closely watched. If the pulse rate should exceed 160 beats a minute, the rule is to withdraw the patient from the chamber and terminate the session without further delay, a fresh trial may be attempted two or three days later but, if the pulse does not behave more satisfactorily on the second occasion, further treatment is given up.

This rule, however, is not absolute and is subject to a few exceptions. Even with a pulse rate of 160 beats a minute, certain patients tolerate the treatment well, but when the pulse rate rises to this level or higher, the greatest vigilance must be maintained. Again, it may happen that the normal pulse rate of a patient (before treatment) may be higher than that of the average patient. During a session of hyperpyrexia, with the rectal temperature between 41.1 and 41.7 C (106 and 107 F), the pulse rate of such a patient may be as high as 160 or even 180 beats a minute, without greater danger than in another patient whose pulse rate at the same temperature has become stabilized between 140 and 150 beats a minute. We have had the opportunity to observe this phenomenon in one case, in which, at each of six sessions of treatment the pulse rate rose to and oscillated between 150 and 190 beats a minute. The condition of the patient remained entirely satisfactory, and the infection was rapidly cured.

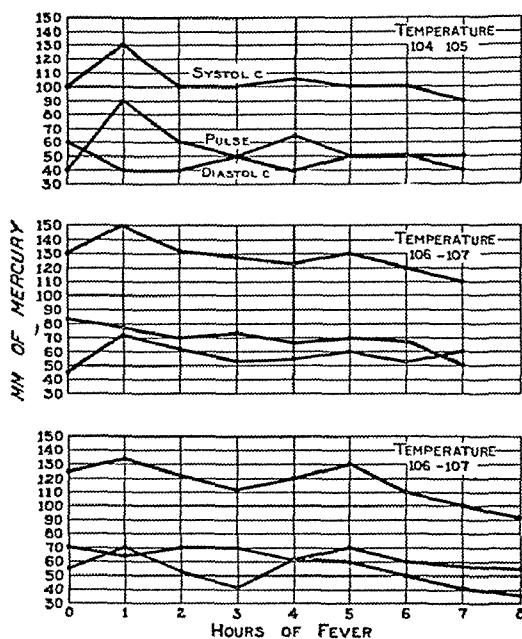


Fig. 6—The systolic, diastolic and pulse pressure of three patients during a six hour session of hyperpyrexia.

Action of Fever Therapy on Blood Pressure—

An almost constant observation is that the blood pressure rises more rapidly than the temperature. By this is meant that the pressure begins to rise before the temperature, and this advance continues until the temperature has reached the maximal level at which it is to be maintained. This fact may seem anachronistic but is readily explained by the physiologic adaptation of the body to any increase in temperature. When the body is subjected to a temperature higher than its ordinary temperature, it seeks to dissipate the excess of heat. It matters little whether the increase in body heat is brought about by exposure to external or internal sources of heat, because the body can diminish the excess of heat only by two principal means: cutaneous evaporation through perspiration and pulmonary evaporation through respiration. Therefore, as soon as the body heat begins to increase, even by one degree, the heart begins to function more and more actively, because the heart is then called on to propel the mass of blood more and more rapidly toward the pulmonary

tree and toward the capillary system of the skin. Naturally, this demands a greater and greater activity of the heart as the temperature ascends, but what surprises one at first is the rapidity with which this increase in cardiac function occurs.

During the phase of thermal elevation, that is, during the first hour of each session, the systolic blood pressure increases considerably. As a rule, the systolic pressure increases by 20 to 30 mm of mercury. But after the maximal temperature has been attained, and during the entire period that it is maintained, the systolic pressure gradually falls, hour by hour, so that at the end of a six-hour session the systolic pressure is slightly lower than at the beginning of the session. This drop in systolic pressure generally varies from 10 to 50 mm of mercury. The diastolic pressure, on the contrary, does not rise during the period of thermal ascension but slowly falls throughout the period of hyperpyrexia. In the majority of cases the total fall in diastolic pressure varies from 10 to 35 mm of mercury (fig. 6).

Like the pulse, the reaction of the blood pressure to heat is a matter of individual variation. By itself, the significance of this variation is slight. What is important to know and to watch attentively is the variability of the pulse pressure and pulse rate of each patient, which is to say the differential variations between the systolic and diastolic pressures of the same patient. This is the most accurate index of the condition of the patient and of his ability to tolerate an increase in temperature. If the pulse pressure diminishes, one must be on one's guard, but if the pulse pressure falls to 20 mm of mercury or below, the patient should immediately be withdrawn from the chamber and the session terminated. Such a fall in pulse pressure must be taken as an indication of cardiovascular insufficiency, which should not be prolonged.

COMPLICATIONS

When the treatment is carried out under the conditions and according to the indications and technic that have been given, serious complications of any kind should rarely be encountered. Only slight and insignificant complications are likely to occur. The most common disturbance encountered during or after a session of hyperpyrexia is headache, but since the headache almost always subsides spontaneously within a few hours, special measures to relieve the patient are seldom required. Since the possibility of erythema and the methods of dealing with it have already been mentioned, no further reference to them will be made. In certain cases in which there is a natural tendency to labial herpes, more or less numerous herpetic lesions around the lips may appear after the first session of treatment, but they tend to diminish and to heal spontaneously as the sessions are repeated. They should be treated on general principles.

Nausea and vomiting, which supervene in a small proportion of patients (nearly always women), especially in those who, in spite of strict instructions not to eat any breakfast, have violated this rule, may complicate the treatment by preventing the patient from drinking a sufficient quantity of 0.6 per cent saline solution, which is so essential to compensate for the loss of chlorides and to diminish the weakness which otherwise must inevitably ensue. As has already been pointed out, this complication rapidly vanishes after

intravenous injection of 500 or 1,000 cc of a solution containing 10 per cent of dextrose and 1 per cent of sodium chloride. Rarely need the treatment be interrupted on this account.

Another unusual complication, which may occur in a few cases, is muscular tetany of the hands or feet or sometimes even of the abdominal wall. Doubtless, this tetany is an expression of hyperventilation (excessive respiration), because it disappears almost instantaneously when the patient is made to breathe carbon dioxide (5 per cent of carbon dioxide mixed with 95 per cent of oxygen). An intramuscular injection of 10 cc of calcium gluconate is equally effective in most cases, but the effect of carbon dioxide is more certain. In the seventy-six patients treated for gonococcal infection included in this report, muscular tetany occurred only once. In other words, one need not be unduly concerned about it, but when it occurs, it is well to understand its genesis and to act promptly for the well being of the patient.

RESULTS

Between Dec. 1, 1933, and Aug. 1, 1935, ninety-two patients with simple or complicated gonococcal infection were referred for fever therapy. Sixteen of these patients did not receive complete treatment, either

Sessions of Treatment Received by Patients Who Had Gonococcal Infection

Number of Patients	Number of Sessions of Treatment
1	1
8	2
9	4
15	5
2	6
1	7
5	8
2	9
3	10
1	11
2	12

because they failed to cooperate or for other reasons, and must therefore be excluded from further consideration. Of the seventy-six patients²¹ who faithfully completed the treatment, sixty-eight (89.5 per cent) were cured and the condition of seven (9.2 per cent) improved, in only one patient did the infection prove rebellious to treatment. These results would have been even better if some of the patients who were treated early could have been excluded. At that time the only fever chamber available was not air tight and, until the significance of this defect was recognized and the defect was remedied, it was frequently difficult or impossible to raise the patient's temperature sufficiently or to maintain it at a proper level for a sufficient length of time. This partly accounts for the fact that a few patients were not cured until they had received nine, ten, eleven or even twelve sessions of fever. During that period, also, the treatment of some patients was interfered with by factors which we have learned to prevent or to control. With improved technic and greater experience, it is now safe to assume that between 90 and 95 per cent of patients can be cured. The seventy-six patients included in this report received 444 sessions of treatment, or a rough average of six sessions for each patient.

21. These include the twenty-nine patients in the cases reported in a previous communication on this subject (J. A. M. A. 104:873-8 [March] 1935).

As may be seen in the table, the majority of patients required six sessions or less. In other words, in fifty-eight cases an average of five sessions of treatment was required to cure the disease permanently. One patient was cured with a single session of treatment. Severe herpes of the lips, mouth, nose and pharynx developed after the first session and further treatment had to be postponed. The patient was confined to bed for nine days, she could not eat, and drinking was difficult. Smears made nine days after the session of treatment failed to show any gonococci, and two cultures made during the succeeding week also were negative. The patient has remained well.

Of the seventy-six patients who completed the treatment, fifty-three were males and twenty-three were females. Thirty-five were married and forty-one were single persons. The shortest duration of the infection in any case had been three days, and the longest duration had been six years, or an average duration of five months. In thirty-six cases the gonococcal infection was confined to the urethra, while in forty cases various complications existed. Five patients had associated pelvic infection, probably of the same kind, although secondary infection may have played a part in the process. Twelve had associated prostatitis, seventeen had gonococcal arthritis as well as urethritis, three had infection of Bartholin's glands, two had epididymitis, one had seminal vesiculitis, four had urethral sinuses, one had periurethritis, one had infection of Skene's glands, one had a prostatic abscess, one had a periurethral abscess, one had pyelitis, two had cystitis, and one had ureteritis.

As far as complications occurring in the course of the treatment or as a result of it are concerned, thirty-one patients had varying degrees of nausea and vomiting. This occurred in seventeen males and fourteen females but, since the total number of male patients treated was sixty-five while the number of female patients was twenty-seven, the proportion in which nausea and vomiting supervened was 26 per cent for the males and 52 per cent for the females. In three cases the vomitus was slightly streaked with blood, but in associated gastro-intestinal lesion could not be found. The tinge of blood probably resulted from rupture of capillaries in the gastric mucosa from the retching efforts of the patient. Muscular tetany was noted in only one case. Small cutaneous vesicles, without significance, were observed in twenty-four cases, and labial herpes developed in eight cases. Forty-two patients complained of headache after treatment, but this usually subsided within a few hours. Four patients complained of pain in the muscles. It is not yet clear to what factor the muscular pain may have been due.

One male patient had had diabetes for some time when he also contracted a gonococcal urethritis. The diabetes having long been well controlled and the patient being free from other contraindicating disturbances, he was subjected to treatment like any other patient. The first session of fever was followed by a reactive fluxus, but this subsided rapidly. At the first few sessions the temperature could not be maintained at the required level for a sufficient time, but the subsequent sessions were satisfactory. The urethral discharge did not cease and smears continued to show gonococci until after the seventh session of treatment. If from the very start the required temperature could have been maintained steadily for five or six hours,

it is certain that the number of sessions necessary to effect a cure could have been materially reduced.

Gonococcal Arthritis—The rapidity with which, in a large proportion of cases, the clinical manifestations of gonococcal arthritis subside as a result of fever therapy is astonishing. In the course of the very first session of treatment the pain abates rapidly and the swelling diminishes a little more slowly. When the articular inflammation is acute the effect of fever therapy sometimes is really spectacular. In most cases thorough treatment is followed by complete and permanent resolution of the inflammatory process. When the inflammation is chronic, the clinical manifestations usually abate promptly and the infection is cured. But when the infection has already injured the bones, has already induced reparative changes in the form of connective tissue proliferation or deposition of bone, these as well as the resulting disturbances of function may be favorably influenced to some extent but cannot be expected to disappear completely.

NONSUPPURATIVE ENCEPHALITIS

REPORT OF FIVE CASES

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Nonsuppurative encephalitis, first described by Barlow and Penrose¹ in 1887 has been comparatively rare until within the last decade. Most of the cases reported have appeared during the past seven or eight years. It has been suggested by Neal and Appelbaum² that the increased incidence of this condition may be due to a greater interest on the part of the physician.

The condition occurs during or following the acute exanthematous diseases, especially measles, dysentery, typhus, pneumonia, influenza, herpes, postvaccinal diseases and exogenous poisons, such as arsenic, lead and alcohol, and recently Winkelmann and Eckel³ reported five cases complicating acute rheumatic fever. Barker⁴ has described the so-called hemorrhagic encephalitis as an acute condition occurring suddenly in previously healthy young persons.

No definite statement can be made concerning the etiology. Actual microbial invasion of the brain has not been found. Levaditi⁵ and Pette⁶ believe the condition is a degenerative process caused by viruses. Globus⁷ holds that it is an inflammatory reaction.

Autopsy reports on the postinfectious forms of encephalitis show distinct gross and microscopic lesions of varying degrees. The leptomeninges show an engorgement of the vessels and considerable fluid in the subarachnoid spaces. There is no mention of any inflammatory exudate over the surface of the brain. In general there is a tendency toward a flattening of

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¹ Barlow and Penrose. On a Case of Early Disseminated Myelitis. *Tr. N. Y. Soc. Med.* 70: 77, 1887.

² Neal, Josephine B., and Appelbaum, Emanuel. Encephalitis Associated with Measles. *J. A. M. A.* 88: 1532 (May 14), 1927.

³ Winkelmann, A. W., and Eckel, J. I. The Brain in Acute Rheumatic Fever. *Arch. Neurol. & Psychiat.* 28: 844 (Oct.), 1932.

⁴ Barker, A. B. The Nonsuppurative Forms of Encephalitis. *Arch. Path.* 19: 213 (Feb.), 1935.

⁵ Levaditi, Constantin. Les ultravirus provocateurs des ectodermes neurotropes. *Ann. Inst. Pasteur* 15: 673 (Dec.), 1930.

⁶ Pette, H. Ueber die Pathogenese der multiplen Sklerose. *Deutsche Ztschr. f. Nervenh.* 105: 76, 1928.

⁷ Globus, J. H. Inflammatory Disease of the Central Nervous System. *Arch. Neurol. & Psychiat.* 28: 810 (Oct.), 1932.

the convolutions with shallow sulci. The cut surface presents a striking appearance. There are hemorrhages, situated mainly in the white matter, which vary in number and size. Some are extensive extravasations destroying much of the brain tissue, while others are tiny punctate hemorrhages. The congestion and hemorrhages give the brain a pink color.

Microscopic examinations of these brains in general show a perivascular hemorrhage about some of the small vessels. The perivascular spaces are infiltrated with cells of the lymphocytic variety. In some of the severe cases there are small areas of hemorrhage. The brain cells do not show any signs of degeneration, except in areas of diffuse hemorrhage. Globus⁷ points out that the so-called areas of demyelination, frequently described, if examined carefully show the adventitial spaces distended with cellular infiltrations, thereby displacing the myelinated fibers and giving the appearance of demyelination. Most observers have reported a glial proliferation, although Globus⁷ believes that many of the cells are lymphocytic rather than glial.

There is a great diversity in the symptomatology in the reported cases. The onset is usually sudden, with such general symptoms as headache, vomiting, confusion, drowsiness, pyrexia, disturbance of the ocular muscles and convulsions. In some of the cases there are hyperesthesia, a spasticity of the muscles and muscular twitchings. There is a stiffness of the neck in most cases. The extremities are either flaccid or spastic and the reflexes variable.

The spinal fluid is clear under normal or increased pressure. The cells are increased and mostly lymphocytes. Globulin and sugar are increased. Cultures and smears are negative.

The blood examination, according to Peterman and Fox,⁸ shows a consistent leukocytosis with a high polynucleosis.

I have been able to study five cases of nonsuppurative encephalitis during the past year. Three were associated with measles, one with infection of the upper respiratory tract, and one fatal case in which the etiology was unknown.

REPORT OF CASES

CASE 1—F. E., a boy, aged 14 years, was seized with convulsions three days after the onset of measles, which were followed by apathy deepening into stupor. He was admitted to the hospital Jan. 30, 1935, in a stuporous condition. The examination showed the patient to be acutely ill, convulsive and comatose. The temperature was 105 F. The pulse was 110 and the respiration 28 and heavy. There was a general measles rash over the body. The pupils were small but reacted to light. Intraocular tension was reduced. The heart, lungs and abdomen were normal. There was a double Babinski reflex. The spinal fluid was clear and was under increased pressure. There were 42 cells per cubic millimeter, lymphocytes predominating. There was a moderate increase of globulin. Fehling's reduction for sugar was normal. Smears and cultures were negative for micro-organisms. The Wassermann reaction and Kahn test were negative. Urinalyses were negative. Blood nonprotein nitrogen was 35 mg per hundred cubic centimeters. Blood sugar was 146 mg. No blood counts were made.

January 30 and 31, 10 cc of the father's citrated blood was injected into the patient's buttocks.

The patient made an uneventful recovery and was discharged on the ninth day.

CASE 2—W. B., a boy, aged 11 years, seen March 10, 1935, had begun having measles on the 7th. Three days later menin-

geal symptoms developed. These consisted of frothing at the mouth, rolling of the eyes, convulsions, and fever of 103 F.

When examined, March 10, there was stiffness of the neck and a positive Babinski reflex. The pupils were equal and reacted to light. A distinct measles rash was present.

Lumbar puncture yielded a clear spinal fluid under increased pressure. There were 22 cells per cubic millimeter, mostly lymphocytes. The globulin was moderately increased. Smears and cultures were negative for organisms.

The white blood count was 13,100 per cubic millimeter, with 64 per cent polymorphonuclears. Urine examination was negative.

The following day 20 cc of citrated blood from a boy 7 years old convalescing from measles was given to the patient in the buttocks.

The temperature returned to normal on the third day and the meningeal symptoms gradually subsided. He was discharged from the hospital March 17, completely recovered.

CASE 3—R. T., a girl, aged 14 years, complained of a persistent headache five days after she came down with measles. The following day she was seized with convulsions and then went into deep coma. The examination showed that the patient was acutely ill. The temperature was 104 F., the pulse 128 and the respiration 48 and Cheyne-Stokes in character. She was in a deep stupor and was markedly cyanosed. The neck was rigid. The pupils were dilated and fixed. Kernig's sign was positive. There was a double Babinski reflex and a double ankle clonus. The lungs presented the signs of pulmonary edema. The heart was normal.

Lumbar puncture yielded a clear fluid, which was normal in pressure and contained 100 cells per cubic millimeter, with lymphocytes predominating. There was a moderate increase in globulin, and Fehling's reduction for sugar was normal. Smears and cultures were negative for micro-organisms.

Examination of the blood showed a hemoglobin of 81 per cent. The red blood count was 4,280,000 per cubic millimeter, the white blood count 11,800 with 72 per cent polymorphonuclears.

No treatment was given other than sedatives and the administration of oxygen. At the end of one week she had completely recovered.

These three cases of nonsuppurative encephalitis complicating measles seem to illustrate the typical clinical picture and course. The first two patients were given intramuscular injections of citrated blood. In the third case, which was the most severe, no treatment was given. The group is not large enough to warrant conclusions with regard to the value of citrated blood in the treatment of these cases.

CASE 4—C. B., a white man, aged 64, admitted to the hospital April 11, 1935, complained of a sore throat for five days before his present illness. A few days later he was unable to walk, was drowsy and had a tingling sensation in his finger tips which gradually increased for a period of five or six days until it covered the whole body. Hyperesthesia was marked. He complained of extreme photophobia and dysphagia. The temperature was normal, the pulse 81 and the respiration 16. The blood pressure was 130 systolic, 70 diastolic. Examination showed a drooping of the eyelids. The pupils were equal and reacted to light and in accommodation. There was a slight nystagmus in the extreme external positions and an apparent divergence in the extreme upper position. Diplopia was a persistent symptom. There was no disturbance in speech. His mind was clear but he appeared greatly depressed. There was a marked incoordination in the movements of his arms and legs. The knee jerks were absent. No other abnormal reflexes were noted. The heart and lungs were normal.

The spinal fluid was clear and under normal pressure. There was 1 cell per cubic millimeter. The globulin was slightly increased and Fehling's reduction for sugar was normal. The Wassermann reaction was negative.

There were 5,590,000 red blood cells per cubic millimeter and 14,000 white blood cells, with 58 per cent polymorphonuclears.

⁸ Peterman, M. G. and Fox, M. J. Encephalitis as a Complication of Measles. *Am. J. Dis. Child.* 46: 512 (Sept.) 1933.

The blood Wassermann reaction and Kahn precipitation tests were negative. Roentgen examination of the skull showed no pathologic changes.

Convalescence was slow and the patient was discharged considerably improved April 27.

This case demonstrated a focus of infection in the upper respiratory tract, with neurologic symptoms developing five days after the onset of the infection giving evidence of a diffuse encephalitis.

CASE 5—M. M., a housewife, aged 25, admitted to the hospital May 15, 1935, was about five months pregnant. Her husband stated that when she got up in the morning she was very dizzy and went back to bed. A short time later she was apparently sleeping but could not be aroused. She had been perfectly healthy up to this time and had received no medication.

On examination the patient was in a deep stupor and markedly cyanosed. The throat was filled with mucus and there were signs of pulmonary edema. The temperature was 100 F, the pulse 80 and the respiration 20. The blood pressure was 110 systolic, 60 diastolic. The pupils were dilated and fixed and there was a ptosis of the lids. The knee jerks were absent. There were no other abnormal reflexes. The heart was normal. She never regained consciousness and died on the fourth day. The rectal temperature just before death was 108 F.

The spinal fluid was entirely normal, including a negative culture and Kahn reaction and contained only 4 cells. Blood examination showed 81 per cent hemoglobin, 4,110,000 red blood cells per cubic millimeter and 8800 white blood cells, with 84 per cent polymorphonuclears. The blood sugar was 125 mg per hundred cubic centimeters, the blood urea 11 mg. The urine was normal except for a trace of sugar.

The autopsy was limited to an examination of the brain, which was normal in size and shape but rather soft. There was a marked congestion of the vessels of the leptomeninges and edema was present. The convolutions were flattened and the sulci shallow. At the base of the brain there was an extensive hemorrhagic exudate. The vessels of the brain showed no evidence of sclerosis. The cut surface showed numerous tiny punctate hemorrhages, which were confined to the white matter.

Microscopic examination showed edema and fibrosis of the meninges, but no cellular infiltration. The blood vessels were congested and dilated. No specific changes were noted in the ganglion cells. The small blood vessels of the cortex were dilated and showed an occasional perivascular infiltration of lymphocytes. The lining cells of the vessels were swollen and there was a tendency toward the presence of vessel groups. There was a moderate gliosis.

This patient, a young adult, although pregnant, had been perfectly healthy up to the time of the present illness. The onset was sudden, with vertigo and rapid loss of consciousness. There was nothing in the physical examination or laboratory studies to indicate the cause of the cerebral symptoms.

At autopsy there were numerous small petechial hemorrhages situated mainly in the white matter of the brain together with congestion of the meninges and the presence of edema.

The pathologic condition suggested a brain reaction as part of a severe toxemia although the origin was undetermined. A diagnosis of acute hemorrhagic encephalitis was made.

SUMMARY

Nonsuppurative encephalitis appears to be a definite clinical entity that has been comparatively rare until within the last decade.

The condition occurs principally as the result of infections or intoxications.

In five clinical cases the observations do not differ essentially from other cases previously reported in the literature.

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RUPTURE OF THE URINARY BLADDER ASSOCIATED WITH PROSTATIC HYPERTROPHY

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Rupture of the urinary bladder occurs rarely, it is usually difficult to recognize and the mortality is still high, even in this period of accurate urologic diagnosis and skilful surgery.

In the early days of surgery many famous physicians were concerned seriously with the study and treatment of rupture of the bladder. Hippocrates¹ stated in his writings that a severe wound of the bladder was deadly. Galen² in later years, commenting on the aphorisms of Hippocrates, states that this term "deadly" meant a very dangerous wound but not necessarily a fatal one. Besley³ states that until the end of the sixteenth century the authority of Hippocrates was so strong that no one would have been bold enough to report a case of recovery. No one expected patients with bladder rupture to recover, and usually they did not. Even up to the time of the elder Larrey,² the famous surgeon of Napoleon's time, the opinion of Hippocrates was universally accepted. Larrey reports that the old grenadiers of the empire, accustomed to be under fire, not troubled with diuresis or incontinence before a battle as were the new conscripts, and even forgetting to empty their bladders in their ardor to fight, were much more commonly seen with ruptured bladders. Other men such as Velpeau,² von Mikulicz,⁴ Dupuytren² and later, in our country, Otis,⁴ Keen⁵ and Ashhurst,⁶ all reported cases or offered suggestions for the relief of a condition that usually resulted in certain death. The English surgeon Syme² was the first (1848) to make a successful surgical intervention for the relief of an intraperitoneal rupture.

ETIOLOGY

The factors usually associated in producing rupture of the bladder are distention, a variable type of trauma, and not infrequently an associated mental or alcoholic incompetence. Cases of bladder rupture are divided into two groups, depending on whether the rupture occurs intraperitoneally or extraperitoneally.

Berndt,⁷ in experiments on cadavers found that rupture caused by intravesical fluid pressure alone most commonly resulted in extraperitoneal tear. In twenty-four cadavers in which rupture was caused by a blow on a full bladder, the rupture was extraperitoneal in nineteen and intraperitoneal in five. Von Dittel,⁸ who carried out a somewhat similar series of experiments, found that when rupture was caused by a simple distention with water, half of the cases ruptured into the peritoneal cavity and the other half extraperitoneally. If distended by air, the rent almost always occurred intraperitoneally.

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2 Cited by Dambin and Papin.

3 Besley, F. A. Rupture of the Urinary Bladder. Surg. Gynec. & Obst. 4: 514-532, 1907.

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5 Keen, W. W. New Means of Ascertaining Whether the Bladder Is Ruptured. Ann. Surg. 12: 36, 1890.

6 Ashhurst, A. Traumatic Intraperitoneal Rupture of the Bladder with a Report of Two Cases and an Analysis of 110 Cases Treated by Laparotomy. Am. J. Sc. 132: 17-37, 1906.

7 Berndt, F. Experimentelle Untersuchungen über Harnblasenruptur. Arch. f. Chir. 58: 815-839, 1899.

8 von Dittel. Gegen die Füllung der Blase zum hohen Blasenchnitt. Wien. med. Wchnschr. 36: 1505-1539, 1886.

In a small group of cases, rupture occurs without external violence, usually following distention caused by obstruction to the urinary outflow, in most of these cases there is also an associated disease of the bladder wall. In a number of cases rupture occurred as the result of some interference with the nerve supply of the bladder, namely, a spasmodic or paralytic closure of the bladder outlet. White and Wigram⁹ reported a case of extraperitoneal rupture into the abdominal wall in a patient with complete paralysis of the bladder, and Herting¹⁰ cites three cases of nontraumatic paralytic rupture. Frieberg¹¹ reported a case of intraperitoneal rupture from overdistention without injury in a tabetic patient, 35 liters of fluid was obtained through a catheter inserted urethrally. Regarding paralytic rupture, Morel¹² states that there are two factors working when rupture occurs as a result of paralysis, toleration of the bladder which permits it to dilate, and degeneration of the bladder muscles so that they offer very little resistance to the distention.

In a number of cases rupture occurred directly as a result of some disease of the bladder wall which weakened it. Hedran¹³ reported a case in which spontaneous rupture occurred through an area of fatty degeneration of the bladder wall, autopsy showed that this patient also had a syphilitic aortitis. Castaigne¹⁴ noted a case in which the rupture was through a simple ulcer of the posterior wall. Ludwig⁴ described a case of spontaneous perforation through the bladder wall in an area occupied by a papillary tumor. Crosbie¹⁵ reported a spontaneous case through a bladder wall weakened by an infiltrating carcinoma. In a case of Bitschar's,¹⁶ in which there was a tumor in the base of the bladder, a perforation occurred through the upper posterior wall into the peritoneal cavity. There was no bladder muscle at the site of perforation, the area having been replaced by inflammatory connective tissue. Goldenberg¹⁷ reported two cases in which the sudden muscular compression of the abdominal muscles resulting from lifting heavy objects caused intraperitoneal ruptures. Mailland¹⁸ described a case of rupture secondary to pressure necrosis of the bladder wall from a uterine fibroma. Chattaway¹⁹ reported the case of a woman four months pregnant who had a spontaneous intraperitoneal bladder rupture following forty-eight hours of urinary retention, 1 gallon of urine was removed from the abdominal cavity.

In some cases rupture, while not caused by external trauma or violence is nevertheless the result of influences outside the bladder itself and is not in the true sense a spontaneous occurrence. Such may occasionally follow diagnostic and therapeutic procedures on

the bladder. Rupture has not infrequently occurred from overdistention during a cystoscopy, general and spinal are not as safe as sacral anesthesia for these cases, because in sacral anesthesia the pain sense from overdistention is not completely lost. Wagner²⁰ reports six cases of rupture after the injection of fluids into the bladder, and Neve²¹ noted that rupture occurred following the injection of only 270 cc of fluid preparatory to doing a litholapaxy. Cassuto²² described a case in which rupture of the bladder resulted from an intravesical explosion of the gases accumulated from fulguration of the bladder neck. Saint Cene,²³ who reported two analogous cases, found that the explosion took place on fulminating near the upper surfaces of the bladder where gas accumulates. Kietschmer²⁴ recently reported two cases of intravesical explosion with rupture of the bladder during transurethral electroresection of the prostate.

Occasionally a case is described in which rupture seems to be the result of mechanical obstruction alone. King⁴ reports a case of bladder rupture occurring in a fetus with an imperforate urethra, and Sisk²⁵ quotes a case of Talbot's in which rupture occurred as a result of unrelieved phimosis. Rather exceptionally rupture of the bladder is seen in association with stricture of the urethra or prostatic obstruction. In both these conditions there is usually an associated cystitis and a degeneration of the musculature of the bladder wall. Sisk² reported a case of spontaneous extraperitoneal rupture of the bladder as a result of obstruction to the urinary outflow by a urethral stricture that had been present since childhood. Similar cases have been reported by Lejar² and Besley.³

Cases in which rupture of the bladder occurred in association with prostatic hypertrophy are very rare, but references to such conditions are occasionally seen in the literature. Rupture in such cases is primarily due to obstruction at the bladder neck and secondarily increased intravesical pressure, plus degenerative changes in the bladder wall. Moser²⁶ reports the case of a man aged 59, in whom rupture occurred as a result of long-standing dilatation of the bladder caused by hypertrophy of the prostate.

The following case is one in which prostatic obstruction caused a chronic distention of the bladder, cystitis, disease of the bladder wall and, finally, a rupture into the extraperitoneal tissues.

REPORT OF CASE

A man, aged 76, had been having difficulty in urination during the last three years. There was frequency and nocturia every hour, and it was usually necessary to strain considerably to empty the bladder even partially. He had had some dribbling for a year, but during the last six months there had been a gradually increasing incontinence, for the last three months he passed no urine except that which dribbled out. During this time he was in bed most of the time and found it necessary to make some effort to force out a little urine every hour or two during the day or night. Seven days before admission he had as he expressed it a gripe in the abdomen since which

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time he had had constant abdominal pain and tenderness and a mass in the lower part of the abdomen which gradually increased in size and was at this time the size of a grapefruit. He had been catheterized only once, shortly before coming to the hospital.

On entry into the hospital the temperature was 96 F, the pulse 84 and the blood pressure 120 systolic and 70 diastolic. The pupils reacted normally and the other reflexes were not unusual. He was in moderate shock but roused readily when questioned. The lungs were clear and the heart regular, with faint sounds and no murmur. The arteries were tortuous and sclerosed but compressible. The bladder was markedly distended and on the abdominal wall above the pubes a hard rounded, nonfluctuant fixed mass, about 8 cm in diameter could be felt. After catheterization of the bladder the mass was slightly less prominent and more freely movable but apparently did not diminish in size. Thirty ounces (887 cc) of cloudy, foul-smelling urine was removed with the catheter. The catheter was fastened into the urethra and left in place. The prostate was about twice the normal size, firm, fixed and rounded but not irregular or exceptionally hard.

The urine contained a large amount of pus, blood and albumin, but no sugar. An examination of the blood showed a hemoglobin of 48 per cent, and each millimeter of blood contained 3,200,000 red blood cells and 21,000 leukocytes, 83 per cent of which were polymorpho nuclear cells. Roentgen examination of the kidneys, ureters and bladder revealed nothing unusual except an area of increased density in the region of the suprapubic mass. A Wassermann test on the blood was negative.

Two conditions presented themselves for consideration—a cystic formation of the lower end of the urachus or a ruptured bladder. The latter diagnosis seemed substantiated by the long history of urinary difficulty, the sudden onset of the tumor and the bladder neck obstruction. The patient was in moderate shock and the urinary retention was satisfactorily relieved by the moving urethral catheter, consequently only a simple incision and drainage of the mass appeared to be necessary. The patient was taken to the operating room and, under a local anesthetic a midline incision was made in the suprapubic mass. Between the muscles and the overlying fascia there was a collection of about 4 ounces (118 cc) of foul, highly infected urine. The area was drained and the wound closed loosely. The bladder was not exposed and no urine was seen oozing into the wound as the bladder was kept empty by means of the urethral catheter. As the patient was somewhat in shock nothing further was done. He recovered rapidly from the operation and several days later the two hour intravenously injected phenolsulfonphthalein was 15 per cent 5 per cent the first hour and 10 per cent the second five days after this it was 25 per cent for the two-hour period. The wound healed readily, and the patient's general condition became improved. An electrocardiogram showed indications of myocardial changes and gave a suggestion of generalized arteriosclerosis.

Cysto urethroscopy revealed an enlargement of the lateral lobes of the prostate (2 on a scale of 1 to 4) together with an enlarged middle lobe. The bladder wall was markedly trabeculated and there were many small cellules. In the interior upper wall of the bladder there was an area of inflammation about 2 cm in diameter in the center of which were several linear tears or scars.

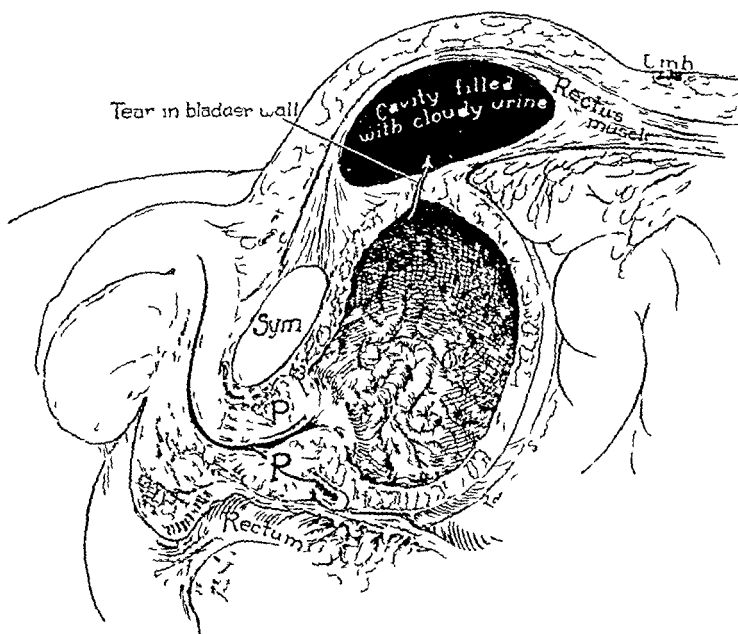
As the patient did not readily tolerate a permanent urethral catheter it was removed after a few days and suprapubic drainage was instituted under a local anesthetic. The skin and fascia were cut and the muscles retracted. The peritoneum and structures overlying the bladder were matted down, thickened adherent and friable but stripped from the surface of the bladder without much difficulty. No evidence was found of an open urachus or of anything resembling the urachus. The tract through which the bladder had opened into the overlying tissues could be readily made out, but no fluid was coming through at this time. The bladder wall was very friable and at least 1 cm thick. It was incised with a knife

and a No 30 Pezzer tube fixed in place. Exploration of the bladder revealed nothing unusual but the enlarged prostate.

The bladder was closed and the patient made a good operative recovery. He left the hospital two weeks later to go home, the suprapubic tube being still in place. He returned one month later for prostatectomy.

DIAGNOSIS

Patients with traumatic bladder rupture generally have severe pain in the lower part of the abdomen at the time of injury. This pain is continuous and is associated with vesical tenesmus, and usually the patient is in moderate shock. The symptoms in cases of spontaneous rupture differ very little from those in which rupture is caused by trauma. Spontaneous rupture is more likely to occur in elderly individuals with a history of prolonged bladder trouble. Generally in cases of rupture there is a strong desire but inability to urinate, or only a few drops of blood may pass. In some cases voiding may be quite free, the urine being blood tinged. Besley noted that the patient is usually unable to walk.



Rupture of bladder wall opening into extraperitoneal tissues

or does so with difficulty and that at the time of injury there is a sense of something giving way or tearing in the lower part of the abdomen.

If the rupture is extraperitoneal there is usually pain and swelling in the suprapubic area, and there may be signs of extravasation such as brawny edema or pitting of the tissues. The patient becomes septic and at times has chills and fever. Intraperitoneal ruptures, which, unfortunately are the more common type, are more serious and at times quite difficult to recognize. Symptoms of peritonitis, such as abdominal tenderness and muscular rigidity, appear early, and later vomiting and obstipation. On the other hand, a number of cases of intraperitoneal rupture have been reported in which the abdominal cavity was filled with urine for several days without signs of peritonitis.

In early reports of cases the catheter test and the injection test are frequently mentioned. These tests are still used quite as a routine and at times may be of value. The patient may be catheterized and no urine or only a small amount of bloody urine obtained, or possibly an amount is withdrawn much greater than

could be contained in a bladder of normal size. No urine or a large amount of urine from an individual who has not voided for a considerable time is added evidence of rupture of the bladder. The bladder opening may have permitted the urine to escape into the peritoneal cavity, from which it cannot be withdrawn, or there may be such a large tear in the bladder wall that a free flow back and forth is possible. In some cases extremely large amounts may be withdrawn, Freiberg drained off more than 3 liters by catheter. In the injection test a measured amount of solution is injected into the bladder and then withdrawn, a smaller or larger return suggesting either a loss or a gain in fluid through an opening in the wall.

Cystoscopy in some cases is of little value on account of inability to distend and fill the bladder with fluid, or visualization may be decreased by extensive bleeding. Mathe²⁷ states that small tears may be overlooked with the cystoscope, as the tear usually does not extend straight through the bladder wall, like an incision made by the scalpel, but extends in and on different planes between the muscle layers.

Cystography, following the simple injection of a medium opaque to x-rays, will usually give definite and accurate information as to the condition present. Roentgenography, following the injection of air after removal of most of the opaque medium from the bladder, gives a good contrast picture, usually indicating the condition of the bladder, the location and, at times, the extent of the lesion present. Mark,²⁸ observing the innocuousness of mediums for intravenous urography, has used this medium in a case of extraperitoneal rupture of the bladder, being able not only to diagnose the condition correctly but to note accurately the location of the lesion. This procedure, while useful in some cases, is of little value in the presence of shock, as the medium is not readily excreted by the kidneys.

TREATMENT

The treatment in both the intraperitoneal and the extraperitoneal types of rupture is usually immediate operation. This condition is a surgical emergency, and delay, particularly when rupture into the peritoneal cavity has occurred, is as dangerous as in the case of any other acute abdominal lesion. When the tear has been through the peritoneum the abdomen is opened, the bulk of the fluid is withdrawn by suction and the rent in the bladder is closed. Both the peritoneal cavity and the bladder are then adequately drained. In some cases, as shown by Crosbie,¹⁶ if the bladder tear is small it need not be sutured, as it will close itself when proper drainage of the bladder is provided. In the extraperitoneal type of rupture the main procedure is bladder drainage, together with drainage of any perivesical pockets or areas of extravasation. Usually individuals with rupture of the bladder are in poor general condition, and rapid accurate operation is necessary only what is absolutely essential at that time being done.

MORTALITY

The mortality even of uncomplicated rupture of the bladder, always has been and still is very high. Complications and coincidental injuries in the traumatic cases greatly increase the severity of the condition.

Bartels⁹ in 1878 reported a mortality of 96 per cent in ninety-eight patients treated without operation.

Rivington³⁰ in 1884 collected 300 cases, thirty-eight patients recovered, of which number thirty were in the smaller group of extraperitoneal ruptures. Although the other eight were described as being intraperitoneal cases, Rivington questions the diagnosis, believing them also to be extraperitoneal in type. This illustrates the attitude at that time toward the extreme rarity of recovery in cases of intraperitoneal rupture. Seldowitsch³¹ in 1904 reviewed thirty-four cases from the Russian literature. Twenty-eight (87.5 per cent) ended fatally. Also fifteen patients who were not operated on died. In the same year Dambrin and Papin³² in France collected and analyzed seventy-eight cases in which operation was done for intraperitoneal rupture, thirty-four (43.5 per cent) of the patients died. Thirty-four patients of this series had been operated on since 1895, of these only seven (23 per cent) died. Negley³³ in 1927 reviewed thirty-four cases from the Los Angeles General Hospital. Fourteen cases were of extraperitoneal rupture, four patients died, a mortality of 28.6 per cent. There were twenty cases of intraperitoneal rupture, four patients died, a mortality of 20 per cent. In 1929 Campbell³⁴ reported fifty-five cases from Bellevue Hospital, thirty-five (63.6 per cent) patients died. Of the patients suffering from intraperitoneal involvement, twenty-six (73.5 per cent) died, only nine (42.9 per cent) of those with extraperitoneal involvement died.

Besley¹ stated in 1907 "No one condition seems better to illustrate the advances that have been made in modern surgical work than the results now obtained in the treatment of rupture of the bladder." In the early days of surgery almost all patients died. The abdomen was not opened without fear of peritonitis, and consequently many patients were not operated on. The associated lesions and complications took their toll and all in all, rupture of the bladder was a very serious condition. Since Besley made his statement, progress in surgery has been much better illustrated by operative results on organs other than the bladder. The present mortality, while still very high, is mainly due to the tremendous shock and the coincidental lesions, conditions placing the patient beyond help when first seen. In only a small part is the high mortality now due to delayed or unskilful procedures. In uncomplicated cases, when operation is early, the prognosis, both for intraperitoneal and for extraperitoneal rupture of the bladder, should be fairly good.

Pacific Mutual Building

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Deformed Bones in Spite of Vitamin D—Normal bones can be formed only when the food contains ample amounts of calcium and phosphorus. In the case of a lesser supply either vitamin D or ultraviolet light is capable of preventing the occurrence of rickets, but normal bone will not form. It will always contain less than the normal per cent of calcium phosphate. If the dietary calcium or phosphorus is sharply restricted deformed easily fractured bones will result in spite of large intakes of the vitamin.—Newburgh L. H., and MacKinnon, Frances. *The Practice of Dietetics*, New York, Macmillan Company, 1934.

Clinical Notes, Suggestions and New Instruments

PARALYSIS OF THE AXILLARY (CIRCUMFLEX) NERVE WITH SPONTANEOUS RECOVERY AFTER SEVEN MONTHS

SIDNEY HIRSCH, M.D., NEW YORK

Senior Clinical Surgical Assistant to the Mount Sinai Hospital,
New York. Surgical Adjunct, Trinity Hospital, Brooklyn

The unusual etiology of paralysis of the axillary (circumflex) nerve with the resultant clinical problems prompts me to report this case.

The exposed position of the axillary nerve in its winding course around the outer aspect of the humerus makes it particularly liable to injury. It can easily be torn or compressed



Fig. 1—Roentgen appearance immediately after accident showing comminuted stellate fracture of the right scapula and fracture of the acromial end of the clavicle. The line below the head of the humerus is the natural epiphyseal line.

may be accomplished by the supraspinatus muscle. There is also loss of sensation over the cutaneous distribution of the nerve involving the skin over the long head of the triceps and lower posterior part of the deltoid. The arm is held in adduction by the unopposed pectoralis major, the latissimus dorsi and the subscapularis muscles.

ANATOMY

The circumflex nerve arises from the posterior cord of the brachial plexus and consists of fibers from the dorsal divisions of the fifth and sixth cervical nerves. It passes downward and outward behind the third portion of the axillary artery and over the outer border of the subscapularis muscle to enter the quadrilateral space together with the posterior circumflex artery and vein, which lie above the nerve. It then turns about the posterior and external surface of the surgical neck of the humerus to end within the deltoid muscle.

The nerve consists of two main bundles, the larger medial funiculus supplying the teres minor and a part of the spinal portion of the deltoid after which it passes under the deltoid and around the lower part of the posterior border to supply the skin over the long head of the triceps and the lower two thirds of the posterior part of the deltoid. The lateral branch gives off the articular branch to the shoulder joint and supplies the remaining portions of the deltoid.

REPORT OF CASE

I G, a well developed girl aged 14 years, was accidentally thrown off her horse, Oct. 20, 1934, and was unconscious for a few moments. I saw her one half hour after the accident when a physical examination revealed exquisite tenderness over the acromial end of the right clavicle and tenderness and bony crepitus over the right scapula.

I did not attempt to lift her right shoulder nor did I ask the patient to do it.

The diagnosis was fracture of the right clavicle and comminuted fracture of the right scapula.

This diagnosis was verified by roentgen studies (fig. 1). Since the fragments were in excellent position I applied a simple Velpeau bandage for immobilization. At the end of two weeks I commenced baking and massage. At the end of the third week I began mild passive motion. At the end of the fifth week I discovered that attempts at active abduction of the shoulder were futile and that passive abduction beyond 60 degrees caused pain. I ascribed the limitation of motion to the pain and this in turn to the fracture. Check up roentgenograms revealed good healing with the fragments well approximated and with no excessive callus (fig. 2). At the end of the seventh week, when attempts at active abduction were still unsuccessful, I investigated further. I found that there was some atrophy of the right deltoid muscle, the roundness of the shoulder having disappeared, causing undue prominence of the acromion and coracoid processes. There was also flattening in the outer infrascapular region.

Sensory examination showed complete anesthesia to pin prick and moderate degrees of temperature over the cutaneous distribution of the fifth and sixth cervical branches comprising the axillary nerve, with a somewhat wider area of anesthesia to cotton wool (fig. 3).

Electrical stimulation showed absent response of the deltoid muscle to faradic current with definite though sluggish response to galvanic current. No attempt was made to determine reaction difference to anodal or cathodal polar closure.

All this information proved the absence of axillary nerve conductivity. The arm was immediately placed in a cast with abduction to about 100 degrees, the forearm pointing upward. Sinusoidal treatment with gentle massage to the deltoid region was begun and given every second day. At the same time the shoulder joint was kept supple by manipulation and movement above the 90 degree angle.

By February 1935 there were still no signs of sensory or motor improvement. An orthopedic consultant felt that sufficient time had been allowed for conservative therapy. Since there was no improvement he urgently favored exploration. He stated that in spite of the surgical difficulties involved in exposing the axillary nerve it gave the patient her only hope for restoration. He was not sure in what part of the nerve's course he would find the loss of continuity, but he felt that the best exposure would be at its emergence from the quadrilateral space before it winds about the humerus.

A neurologic consultant felt that although we had waited the customary four months for evidences of regeneration he would still wait an additional two to three months. The type of injury, a blow and not an incised wound and the absence of any fracture of the neck or shaft of the humerus prompted this attitude. In addition, there was some deep muscle tenderness which he felt was a definite indication of the presence of some nerve conductivity. He also knew of a large number of cases in which no evidences of regeneration were shown for eight or nine months after injury and which then went on to recovery. He felt that the maintenance of circulation and nutrition of the paralyzed muscles by continuous massage and electricity would offset the bad effect of a long interval between injury and operation if operation ever had to be done.

It was the type of case in which it was impossible to make certain that the nerve had actually been divided and that the



Fig. 2—Roentgen appearance Nov. 19, 1934, about four weeks after the accident showing excellent healing.

various sensory and motor changes were not due to concussion or partial laceration from which a recovery might still be expected. I definitely felt, together with the neurologist, that operation was only hazardous and could more than justifiably be delayed.

The passage of another two months bore out the wisdom of the conservative attitude. There was definite evidence of

sensory return by a shrinking of the area of anesthesia to pin prick, cotton wool and changes of temperature.

In April 1935 the sensory anesthesia was only one half the original, although there was still no evidence of motor return. Motion is generally much later in its restoration than sensation. At this time contrast (hot and cold) applications to the deltoid region were begun and continued as a bi-daily treatment in addition to the other measures.

About May 15 seven months after the original injury, it was observed that the patient was able actively to abduct her shoulder. About this time the area of anesthesia to cotton wool had completely disappeared that to pin prick had

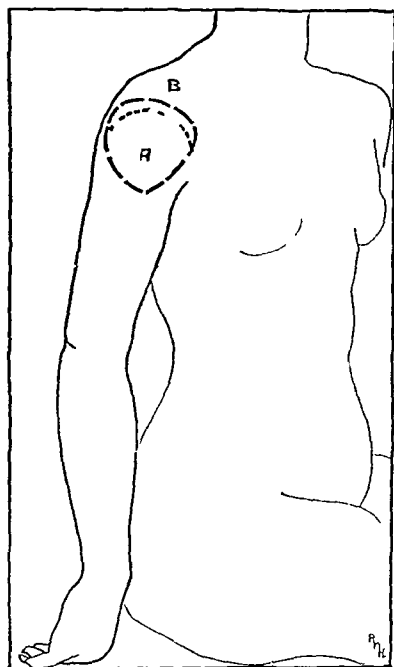


Fig. 3—A area of anesthesia to pin prick moderate degrees of temperature and cotton wool. B additional area of anesthesia to cotton wool.

only a few very small areas of disturbed but not absent sensation and that to hot and cold testing had recovered about 90 per cent.

At this writing, July, there is no remaining disturbance of sensation. The muscle tone of the deltoid has improved considerably and the patient is able actively to abduct the shoulder completely. She is still wearing the airplane brace and is still receiving the treatment.

145 West Eighty-Sixth Street

DERMATITIS OF THE PENIS CAUSED BY EPHEDRINE

J. F. HOLLANDER, M.D., PITTSBURGH

Instances of sensitivity to ephedrine have been noted previously, and the occurrence itself would be unworthy of report. The fact of a curiously distant localized sensitivity and the manner by which the irritating substance reached the affected area may be of sufficient interest to warrant recording the following case.

K. K., aged 42, consulted me Sept. 10, 1934, on account of a swelling and redness of the prepuce and the under surface of the shaft of the penis. On a somewhat elongated area of the anterior and under surface of the penis, a few discrete vesicles were discernible. The patient was most uncomfortable because of the itching and burning and on account of the difficulty that he experienced during micturition the intense edema interfering with the passage of the urine. The condition was of one week's duration and it was steadily getting worse.

The usual causes producing a contact dermatitis in this location, such as contraceptives containing quinine condoms and chemicals (saponated solution of cresol) used as vaginal disinfectants were inquired for, but there was no history of the use of these or the exposure to them.

The patient was put to bed and a greatly diluted solution of aluminum acetate dressing was applied. The inflammation subsided readily as a result of this treatment.

A few days later, however, the previous symptoms recurred with great severity. Questioning elicited the fact that the patient was using a hair preparation containing quinine, and I accepted this as the most likely agent causing the sensitivity, the irritant reaching the affected part through the medium of the fingers. The presence of the small discrete vesicles on the under surface of the anterior part of the penis, where the organ is held during urination, strengthened this hypothesis. Patch testing on the arm gave entirely negative results.

Reemployment of the previous treatment again yielded good results. When the inflammation had totally subsided, treatment was discontinued and the patient was instructed to wash his hands thoroughly before urination.

No further trouble was experienced until Sept. 8, 1935, when the patient reappeared for examination with the same eruption in the same location. This time the coincidence of the season of the year was noted and his history was retaken, which brought out the fact that he was subject to early fall hay fever. This was missed entirely on previous questioning as the patient had had only a mild attack of hay fever.

In going into the question of medication of his hay fever it was found that he was using an ephedrine nasal spray quite frequently, and also that he had long discontinued to wash his hands before urination.

After the dermatitis of the penis had totally disappeared a patch test of the ephedrine spray was applied to the arm with completely negative results. Then a 1:50 dilution of the ephedrine nasal preparation was sprayed on the penis, creating an intense reaction and thus proving the local sensitivity, which was somewhat baffling for a time.

This case illustrates

1. A local sensitivity that cannot be proved with patch testing unless the test is applied directly to a previously affected area.

2. That strict attention must be paid to a history of all factors involved; the causative agent was missed one year before because of failure to inquire regarding hay fever and its treatment.

631 Jenkins Building

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE

HOWARD A. CARTER, Secretary

GOULD NEGATIVE ION PROCESS NOT ACCEPTABLE

Manufacturer: Gould Negative Ion Company, Boston

The company claims that the negative ion process is an atmospheric electrical treatment, and is unlike any other kind of electrical therapy.

The following description of the negative ion process as produced with the Gould apparatus is copied from a booklet distributed by the firm:

Ozone is formed and reacts with unsaturated molecules of a special grade of oil which produces an ozonide aldehyde.

Positive ions are removed by means of a negative voltage potential. The air containing negative ions is driven onto the surface of the oil by a power driven fan which fixes the negative ions on neutral molecules. Thus there are ozonide aldehyde vapors, free negative ions and negative ions fixed on neutral oil molecules which are flowing from the vaporizing chamber to the organism being treated.

A positive voltage potential is placed on the body, the negative end of the circuit being connected to a part of the apparatus. Thus the organism becomes the anode and the apparatus the cathode of a circuit composed in part of the flow of negative ions from the vaporizer. The placing of the positive voltage potential on the body causes it to become selective to the negative ions which are electrostatically attracted. Its purpose is also to separate the negative ion from the neutral molecule.

The negative ion upon being detached from the molecule enters the organism and flows towards the positive voltage potential. The position of the positive potential on the organism seems to have a marked effect on the results obtained. Clothing and especially silk will extract the ions to a certain extent thus preventing their entry into the body. Accordingly the practice should be to have the patient disrobe as much as possible and avoid silk in any form.

To obtain the best results from the process the patient should be treated from one to not more than two hours.

Many therapeutic claims are made for the Gould Negative Ion Process. Some of these claims appear in the following excerpts from the company's advertising matter:

The blood is affected in all diseases. This process revitalizes the blood stream; it charges the blood with a normal supply of oxygen thereby allowing the Red Blood Cells and the Hemoglobin to form its natural combination with oxygen which increases the oxidation activity of the blood stream. The White Cells will return to normal faster than the Red Cells.

After a few treatments by this process the general physical condition of the patient is noticeably improved. It stimulates the action of the intestine resulting in more regular evacuations.

The process is harmless; it consists of visible vapor (not a medicine) that kills contagious and infectious germs.

PARTIAL LIST of Diseases Treated—This process has proven successful in treating Asthma and all respiratory diseases, Hypertension, Sinusitis, Rhinitis, Varicose Ulcer, Pyorrhea, Vincent's Angina, Chronic Constipation, Nervous Disorders, some Skin Diseases and Arthritis. It gives almost immediate relief to sufferers from Hay Fever and the relief lasts throughout the season.

Critical or convincing evidence to substantiate the aforementioned therapeutic claims has not been made available to the Council on Physical Therapy. In the opinion of the Council, promotional literature of this kind constitutes an appeal to the public with arguments that have not been verified and may harmfully enhance the feeling of false security on the part of the persons acquiring the device and making use of the process.

In view of the lack of evidence to substantiate the claims made for the Gould Negative Ion Process and until the Council on Physical Therapy voted not to include the process and unit in its list of accepted devices.

JUNIOR BOVIE ELECTRO SURGICAL AND MEDICAL DIATHERMY UNIT ACCEPTABLE

Manufacturer—The Liebel-Flarsheim Company, Cincinnati.

This unit is designed for electrosurgery but it may also be used for medical diathermy. Three types of current are available: cutting, coagulating and medical diathermy. It is provided with convenient switches making these currents readily accessible. The power required to operate the machine at full load is approximately 300 watts. Its wavelength is about 600 meters. Figure 2 is a diagram of the circuit.



Fig. 1—Junior Bovie Electro Surgical and Medical Diathermy Unit

Evidence was submitted pertaining to the electrical and physical characteristics of the unit. The data showed that the temperature rises of the transformer and spark gap were within the limits adopted by the Council. An examination of the electrical circuit and the parts by the Council's investigator indicated that good material had been employed in the manufacture of this unit and the machine assembled in a workmanlike manner. Its shipping weight is unit 89 pounds; subcabinet 60 pounds.

The performance of the apparatus was satisfactory when used for seven months in a clinic acceptable to the Council under the conditions for which it is recommended.

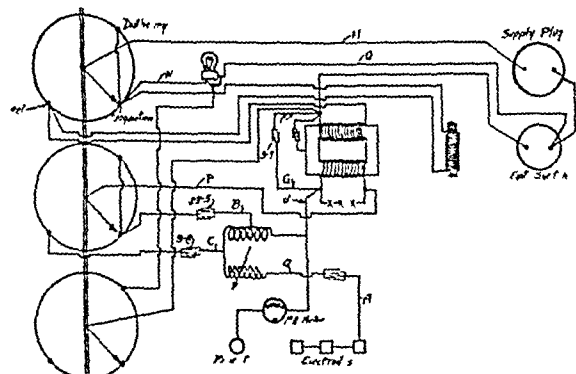


Fig. 2—Schematic diagram of circuit

In view of the favorable report the Council voted to include the Junior Bovie Electro Surgical and Medical Diathermy Unit in its list of accepted devices.

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMOTION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



FRANKLIN C. BING, Secretary

DOLE BRAND HAWAIIAN PINEAPPLE NATURAL UNSWEETENED SLICED (PACKED IN UNSWEETENED JUICE)

Manufacturer—Hawaiian Pineapple Company, Ltd., San Francisco.

Description—Peeled, cored and sliced Hawaiian pineapple, processed and packed in undiluted pineapple juice.

Manufacture—The method of manufacture is essentially the same as for Dole 1 Hawaiian canned pineapple slices (THE JOURNAL, April 8, 1933, p. 1106) except that unsweetened juice is used to fill the cans.

Analysis (submitted by manufacturer) —	per cent
Moisture	83.5
Total solids	16.5
Ash	0.5
Fat (ether extract)	0.02
Protein (N X 6.25)	0.4
Reducing sugars as invert sugar	6.3
Sucrose	7.7
Crude fiber	0.3
Carbohydrates other than crude fiber (by difference)	14.4
Titratable acidity as citric acid	0.9

Calories—0.6 per gram, 17 per ounce.

Vitamins—Biologic assay shows canned pineapple to contain vitamin A and to be a good source of vitamins B and C. Practically equivalent to the fresh fruit in A and B, slightly inferior in C.

Claims of Manufacturer—Fancy grade canned sliced pineapple representing fruit most uniform in color, flavor, texture and workmanship. Packed in undiluted pineapple juice without added sugar. The canned product is practically equivalent to the fresh fruit in nutritional values (vitamin C slightly reduced).

CLLU BRAND TOMATOES WATER PACKED

Distributor—Chicago Dietetic Supply House, Inc., Chicago.

Packer—L. H. Schlecht, Rossville, Ill.

Description—Canned whole peeled tomatoes, packed in water.

Manufacture—Selected tomatoes are washed, inspected, sorted, scalded, hand peeled and packed in cans. The cans are filled with water, heated, sealed and processed.

Analysis (submitted by distributor) —	per cent
Moisture	94.6
Total solids	5.4
Ash	0.5
Fat (ether extract)	0.4
Protein (N X 6.25)	0.8
Crude fiber	0.5
Starch (dia tae method)	2.4
Carbohydrates other than crude fiber (by difference)	2.2

Calories—0.2 per gram, 6 per ounce.

Claims of Manufacturer—Choice quality whole tomatoes packed without added sugar or salt. For use in special diets in which sugar or salt is proscribed or in quantitative diets of calculated composition.

MARCO BRAND EVAPORATED MILK

Distributor—H. A. Marr Grocery Company, Denver, Lind, Okla., Omaha, Amarillo, Texas, Colorado Springs, Colo., Sterling, Colo., Plainview, Texas, Pampa, Texas, Clovis, N. M.

Packer—Carnation Milk Products Company, Milwaukee, or other manufacturers of accepted evaporated milks.

Description—Canned unsweetened sterilized evaporated milk the same as Carnation Milk (THE JOURNAL, June 14, 1930 p. 1919).

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, FEBRUARY 29, 1936

RECENT STUDIES ON POLIOMYELITIS

The second portion of an article on poliomyelitis, written by Biraud and Deutschman¹ and published in the Epidemiologic Report of the Health Section of the Secretariat of the League of Nations, summarizes recent additions to knowledge concerning this disease. The antigenic properties of poliomyelitis virus, they say, differentiate it clearly from the bacteria and identify it with the ultraviruses. Further evidence of the ultravirus nature of the etiologic agent is its ability to cause the appearance of inclusions in the nerve cells it attacks. The monkey remains the best experimental animal for the study of the behavior of poliomyelitis virus. From investigations on this animal it appears that the virus follows the nerve fibers as do the rabic virus and that of yellow fever.

Immunity to poliomyelitis has been the subject of numerous recent studies. The extreme rarity of second attacks is evidence of the immunizing nature of this condition. The immunity, however, is not stable, at least at the beginning, since relapses are not prevented and are sometimes brought about by intercurrent diseases. Neither does the immunity imply the immediate disappearance of the virus, as is shown by the recuperation of the virus after cataphoresis of the nervous center of the monkey twelve days after recovery from poliomyelitis. It is even possible that this persistence of the virus helps to strengthen immunity. The titration of the neutralizing antibodies in serum has given much additional immunologic information. Thus, when the serums of twenty-three persons who had been in close contact with poliomyelitis were tested, twelve did not neutralize the virus, but five months later when six of these were retested they all possessed neutralizing power. Furthermore, eight of fifteen subjects whose contact with patients had been occasional proved non-immune immediately and the six retested three and a half months later gave the same result. Unapparent

infection therefore causes immunity to develop at only a slow rate.

A review of the geographic location of poliomyelitis indicated that epidemics and characteristic sporadic cases are indubitably more frequent in countries with cold or temperate climates. The disease is not excluded, however, from warm countries, and the lower numbers of cases notified in tropical countries can no doubt be explained partly by the less well developed medical organizations often present. Whatever the explanation, a reason has not yet been found for the fact that the proportion of imperceptible infections, as measured by the neutralizing antibodies, is higher in warm than in temperate or cold countries.

The value of serum treatment of poliomyelitis is difficult to analyze. The practical impossibility of diagnosis before the onset of the paralytic stage, the normally low number of cases of paralysis in the average untreated epidemic, and the difficulty of obtaining adequate control all militate against easy conclusions with regard to the effectiveness of serum treatment. The authors summarize the present position of this question as follows: "1. Experimental studies show that the most active serums are powerless to check the development of the disease even when given before the onset of the initial febrile stage. 2. In the absence of strict control groups and owing to the impossibility of foreseeing the course of preparalytic cases, there are no irrefutable statistical proofs of the efficacy of the serum, even when applied at the preparalytic stage. Inversely, there is no absolute proof of its complete ineffectiveness. 3. The majority of observers have reported favorable clinical effects from the use of serum (decline of symptoms of intoxication and of fever, etc.), these effects often being apparent immediately, whatever the mode of administration (intracranial, intraspinal, intramuscular or intravenous)."

Two methods of prophylaxis have received the most concentrated study. Thus the prophylactic use of convalescent or immunized animal serum, and of immunotransfusion, is based on experimental results that have generally been favorable but have not yet received convincing statistical proof of its efficacy for man. Even if effective, however, the immunizing action cannot be prolonged or repeated indefinitely. Hence, prophylaxis by vaccination has been attempted on a fairly wide scale.

The virus used in vaccination has been variously killed or attenuated by solutions such as formaldehyde or sodium ricinoleate. Administration of such vaccines has usually resulted in considerable immunity development. The authors state, however, "that vaccination against poliomyelitis is now practicable without serious risks and with considerable probability of effectiveness." The report of Leake² was evidently unknown at the time these words were written. Current opinion

¹ Biraud and Deutschman. Poliomyelitis. History of the Disease and of Research Concerning Its Epidemiology During Recent Years. Epidemiologic Report. Health Section of Secretariat League of Nations 14: 207 (Oct-Dec) 1935.

² Leake J. P. Poliomyelitis Following Vaccination Against This Disease. J. A. M. A. 105: 2152 (Dec. 28) 1935.

since Leake's report of twelve cases of poliomyelitis following vaccination tends definitely to consider vaccination at present too dangerous to employ. Furthermore, some obscurity exists on another point. If, as some evidence indicates, poliomyelitis assumes its paralytic form in persons whose constitution makes them unable to produce antibodies in sufficient quantity, the effectiveness of vaccination in such cases is doubtful a priori. If the latter hypothesis is true, the persons successfully vaccinated would be precisely those in whom the infection would have manifested itself in unapparent or abortive forms in any case.

While great progress has undoubtedly been made in the understanding of poliomyelitis, effective control must await further fundamental elucidation.

RÔLE OF BILE IN VITAMIN A UTILIZATION

Much evidence is available emphasizing the role of bile in the absorption of lipids,¹ little or none of this foodstuff is absorbed when bile is excluded from the intestinal tract. This decreased absorption of the lipids is significant first with respect to the requirement of the organism for this material for purposes of energy. It assumes added importance when considered from the point of view of water-insoluble substances that depend on fat as a vehicle for transport across the intestinal wall. Decreased absorption of cholesterol, for example, has been noted in icteric patients and is apparently associated with a diminished absorption of fat. Whether the bile aids the absorption of cholesterol by direct solvent action on this sterol or by an indirect assistance through its effect on fat (a solvent for cholesterol) is not entirely clear. The fact remains that bile influences the absorption of lipids and of materials associated in nature with this class of substances.

One of the most important fat soluble substances of physiologic interest is vitamin A. It seems logical to reason a priori, therefore, that bile should play an important part in the absorption of vitamin A or its precursor, beta carotene, from the intestinal tract. Interesting laboratory and clinical evidence has recently been offered to support this hypothesis and to emphasize the important influence of bile in the utilization of vitamin A.

The laboratory contributions of Schmidt and his co-workers² at the University of California have presented suggestive observations on the absorption of fat soluble vitamin A in the absence of bile and have pointed out quite unexpected differences in the ability of icteric animals to utilize the vitamin as contrasted to its precursor beta carotene. Using the rat as the experimental animal, and employing the daily vaginal smear examination as a criterion of vitamin A deple-

tion, these investigators found that the absorption of vitamin A, in the form of cod liver oil, from the gastro-intestinal tract does occur in the absence of bile. In experimental icteric rats on low vitamin A diets, it was possible to restore the normal vaginal smear pictures by oral administration of cod liver oil. The storage of vitamin A in these animals could then again be depleted to a level at which only cornified cells, indicative of restricted vitamin A intake, were found in the vaginal smears. It was then possible to restore the normal picture for the second time by oral administration of cod liver oil. In contrast to these results with the oil, it was observed that in the absence of bile the vitamin A deficient rat does not respond to oral administration of a mixture of the alpha and beta carotenes. The carotene therapy did cause a positive response in these animals, however, when the material was given by subcutaneous injection. Further evidence of the important role of the bile acids as carriers of carotene across the intestinal wall of the rat was provided by the demonstration that the vitamin precursor is effective orally in icteric rats if the substance is administered together with preparations of the bile acids.

Although it is difficult to analyze case reports in the early literature because of the lack of dietary data, it seems evident that there has long been a clinical association of severe protracted jaundice with various manifestations of what is now known as vitamin A deficiency. Within recent years the specific connection between hepatic disease with icterus and vitamin A deficiency has become definitely apparent. The importance of this relation may be emphasized in view of the possible role of bile in the absorption of vitamin A. In spite of the fact that the diet received may be adequate in vitamin A and lead to none of the more obvious manifestations resulting from a lack of this vitamin, recent reports indicate that more deep-seated changes, evident only at necropsy, may be occurring. Altschule³ has presented an interesting postmortem study of eleven infants with congenital atresia of the bile ducts. All these infants received diets adequate in respect to vitamin A, and none presented clinical evidence of xerosis or keratomalacia during life. However, definite microscopic evidence of vitamin A deficiency was found in six of the eleven cases. It seems possible that in the clinic also this deficiency may be related to a failure of absorption of vitamin A or its precursors from the intestinal tract as the result of the absence of bile. The presence of this deficiency disease may be overlooked because the consequent gross manifestations, as specific ocular changes occur much later than the histologic alterations. The experimental and clinical data indicate the efficacy of parenteral administration of vitamin A in conditions of severe obstructive jaundice. Oral administration, accompanied by bile salts, may also be of value.

¹ Vezar, F. *Nutrition Abstr. & Rev.* 2: 441 (Jan.) 1933.

² Schmidt, W. and Schmidt, C. I. A. Univ. California Pub. Biol. 21: 211 (1930). Green, J. A. and Schmidt, C. I. A. *Am. J. Physiol.* 111: 492 (April) 1935.

³ Altschule, M. D. *Vitamin A Deficiency*. Arch. Path. 20: 545 (Dec.) 1935.

Current Comment

EXPERIMENTAL AND CLINICAL SINUSITIS

Since 1930 Fenton and Laisell have carried on a series of investigations on sinus inflammations. Their studies have been made for the most part by observing the effects of surface applications to the membranes of the frontal sinus in cats. These membranes were first inflamed by inoculation with human strains of hemolytic streptococci. In a communication now appearing¹ these studies have been summarized. A number of preparations have been employed including histamine, azochloramide aminoacetic acid, acetylcholine amniotic fluid isotonic chlorophyll, sodium alum and ten new compounds thought to have effects similar to those of ephedrine. Some of these substances have been tried also on patients. The investigators were forced to conclude from these studies that, owing to the defensive factors inherent in sinus epithelium and the connective tissue elements of its tunica propria almost every preparation applied to the surface of such membranes becomes an irritant unless its strength is isotonic. Stronger solutions are almost certain irritants, as are those which in any way interfere with ciliary action, no matter how well they may function as antiseptics in a test tube. Only a few chemical substances are favorable to the growth of cells and stimulate an influx of reparative histiocytes and leukocytes. It has also been demonstrated that histiocytes take up particulate matter from the outer (bony) side of the sinus membrane as well as from the lumen of the cavity. Specifically, histamine in the normal sinus merely increases the flow of mucus but in repeated doses causes severe acute exacerbation of chronic suppuration. Azochloramide was shown to share the irritant properties of similar substances without stimulation of repair. Reparative effects were also not noted after the application of aminoacetic acid or acetylcholine to the surface, although the latter brought about marked edema of both the acutely and chronically infected membranes. Amniotic fluid both half and full strength caused marked congestion, leukocytic infiltration and early fibrous reparative changes with diminution of the superficial destructive changes during seventy-two hours. Astringents (sodium alum and tannic acid) used in weak solution inhibited greatly the severity of infection when such sinuses were subsequently inoculated. The new ephedrine-like compounds had a slightly stimulating effect toward repair, especially tetrandine methiodide. All produced slight blanching and shrinking of human mucous membrane. Proof of excessive fibrosis caused by roentgen therapy was afforded by the examination of the tissues from a man so treated. The authors feel that little is to be gained at present from further histopathologic study of sinus membranes of cats treated by local applications. The anatomic problems of lymphatic drainage of the sinuses however, and of their anatomic innervation remain unsolved. Although difficult these problems are of much importance in the interpretation of the physiology and pathology of the sinuses.

1. Fenton R. A. and Laisell Olof. Research Report on Experimental and Clinical Sinusitis. Arch. Otolaryng. 23: 18 (Jan.) 1936.

DEATH RATE FROM ALCOHOLISM

Probably the best evidence of the extent of alcoholism can be obtained from comparative examinations of deaths due directly to this cause. Leary¹ has recently reported deaths accredited to alcohol in Suffolk County, Mass., from 1913 to 1934. Most of the deaths were directly due to alcoholism as such. The added cases included a percentage of the alcoholic pneumonias in which the alcoholic factor was of primary importance and some of the cases of fractured skull in which the degree of alcoholism was responsible for the injury that led to the fracture. The list did not include deaths from automobile accidents of any kind. The criteria have not changed to any appreciable degree in the period recorded. The deaths related to alcoholism were on a relatively standard average basis in the years 1913, 1914 and 1915. In 1916 and 1917 there were considerably more deaths. These were years of prosperity when workers were well paid. In 1917 and 1919 under the influence of patriotic urge we became one of the most temperate people in the world, with a corresponding drop in the number of alcoholic deaths. Then came prohibition with little liquor available in 1920 and a still further drop in the deaths from alcohol. In the following two years a rise again began. The deaths during this period were for the most part in those who had access to bathing alcohol, bay rum, perfumes and Jamaica ginger. By 1923 the bootlegging business was well established and the sources of supply were many. The alcohol deaths continued to rise under this influence until 1925 after which they continued at a fairly high but slightly downward level until 1933. Prohibition was abolished Dec. 4, 1933. In Massachusetts the local alcohol control system permitted the sale over the counter by druggists of 95 per cent alcohol. During the year ended Dec. 4, 1934, there was a tremendous rise in the alcohol death rate. By contrast with the lowered death rate reported elsewhere the probability is indicated that the sale of concentrated alcohol is largely responsible. Since concentration as well as quantity is a known factor there seems little doubt that the readiness with which ethyl alcohol can be purchased over the counter in drug stores is an important element in the increase reported.

PRODUCTION OF CASEIN

Ordinarily casein is considered in connection with the nutritive value of milk and cheese, there is approximately 2.5 per cent of this important protein in fluid cow's milk. In the commonly used varieties of cheese, from 20 to 35 per cent is casein and the products of its digestion. However, casein enters into commerce widely in other ways than as a food. In the form of a colloidal solution in alkali, it is used as glue, cement or putty. When chalk, clay or kaolin is added to the thin casein glue a size or coating for paper is obtained. Dry powdered casein or moist curd when heated becomes plastic and in this condition can be pressed or molded into any desired shape. This material can be turned out and polished and enters into commerce as artificial ivory, artificial celluloid, artificial cork and mitting and

1. Leary Timothy. The Death Rate from Alcoholism. New England J. Med. 214: 15 (Jan. 2) 1936.

as imitation leather. Paints are made from casein in alkali with a suitable filler and pigment, the protein finds use in the dyeing and textile industry as an absorbent and a loading agent. Heretofore large quantities of casein have been imported from South America, New Zealand and Australia, two thirds of that used in 1920 and one half of that used in 1929 being obtained from foreign countries. According to a recent report¹ by 1934 only 4 per cent of the casein used was imported. In that year 37,331,000 pounds was produced domestically. It is obvious from these figures that the United States is rapidly becoming self sufficient in respect to the production of this important product of the dairy industry.

Association News

THE KANSAS CITY SESSION

Section Headquarters

The Hotel President has been selected as the hotel headquarters for the Section on Obstetrics, Gynecology and Abdominal Surgery at the annual session of the American Medical Association to be held in Kansas City in May. All accommodations are under the supervision of Dr. Ira H. Lockwood, chairman of the Housing Committee, who may be addressed in care of the Chamber of Commerce, 1028 Baltimore Avenue, Kansas City, Mo. Requests for reservations should be sent to Dr. Lockwood as soon as possible.

Fraternity Luncheons

Reservations for fraternity luncheons for Wednesday noon May 13, have been made as follows:

Hotel Baltimore: Phi Chi, Dr. Ralph E. Duncan, chairman; Hotel Kansas City: Alpha Mu Psi, Omega, Dr. Pat Dunn, chairman; Omega Upsilon Phi, Drs. C. K. Smith and John Bouslog, chairmen; Phi Alpha Sigma, Dr. E. P. Heller, chairman; Phi Beta Psi, Dr. Orville Withers, chairman; Theta Kappa Psi, Dr. Herluf Lund, chairman; Hotel Muehlebach: Phi Delta Epsilon, Dr. L. M. Shapiro, chairman.

Hotel President: Alpha Epsilon Iota, Dr. Lorraine Sherwood, chairman; Alpha Kappa Kappa, Dr. David Braden, chairman; Nu Sigma Nu, Dr. E. H. Hershinger, chairman; Phi Rho Sigma, Dr. Ralph Perry, chairman.

Fraternities desiring reservations may communicate with Dr. Harry M. Gilkey, 1316 Professional Building, Kansas City, Mo.

RADIO BROADCASTS

The American Medical Association broadcasts over WEAF the Red network instead of the Blue as formerly, and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time, 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of 'Medical Emergencies and How They Are Met'. The title of the program is 'Your Health'. The program is recognizable by a musical salutation through which the voice of the announcer offers the toast 'Ladies and gentlemen, your health!'. The theme of the program is repeated each week in the opening announcement which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community day and night for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

Red Network—The stations on the Red network of the National Broadcasting Company are WEAF, WEEI, WTIC, WIAR, WTAG, WCSH, KYY, WFBR, WRC, WGY, WBF, WCAE, WTAM, WWI, WMAQ, KSD, WHO, WOW, WDAF.

Pacific Network—The stations on the Pacific network are KGO, KPO, KFI, KGW, KOMO, KHQ, KFSD, KTAR.

Network programs are broadcast locally or rejected at the discretion of the local station. The lists indicate stations to which programs are available.

The next three programs are as follows:

March 3: Cancer, W. W. Bauer, M.D.
March 10: Hard of Hearing, Morris F. Hahn, M.D.
March 17: Eyesight Saving, W. W. Bauer, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS REFLECT TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Bust of Lincoln Presented—A bust of Abraham Lincoln, presented to the Los Angeles County Medical Association by Dr. Sven R. Lokrantz, was unveiled at a meeting, February 20. The program included an address by the sculptor, David Edstrom, and one by Mr. H. A. Guernev, pilot United Air Lines, entitled 'Behind the Scenes of Air Transportation'. Dr. Harlan Shoemaker, president of the association, also spoke.

The Eyesight Swindlers Again—Sheriff Rayburn of Riverside reported January 2 that two swindlers using the 'radium water eye drop racket' had been paid \$75 by an elderly person in his vicinity for their services. One man used the name A. C. Mueller. He was said to be about 45 years of age, 6 feet tall, weighing 185 pounds, with dark hair and eyes. The other, John Doe Reed, was about 50 years of age, 5 feet 9 inches tall and weighed about 150 pounds. He was of slim build with dark hair and eyes and wore glasses. He had a thin face and hollow cheeks.

Society News—The San Bernardino County Medical Society devoted its meeting in San Bernardino, January 7, to a symposium on cancer of the breast. Speakers included Drs. John M. Flude, Los Angeles, western field representative of the American Society for the Control of Cancer, Carlos G. Hilliard, Redlands, John A. Patterson, Colton, C. Owen and Philip M. Savage, Sr., San Bernardino, Calvert L. Emmons, Ontario, and John G. Staub, Jr., Redlands. Dr. Samuel Hanson, Stockton, addressed the San Joaquin County Medical Society, January 9, on 'Occurrence and Management of Persistent Occiput Posterior', and Dr. Edmund W. Butler, San Francisco, 'Aid to Diagnosis in Wounds in the Abdomen' and 'Recent Advances in the Treatment of Poisons'. At a meeting of the Sonoma County Medical Society in Vallejo, January 14, Dr. Hans Lissner, San Francisco, spoke on 'Adrenal Cortical Syndromes with Mention of Cushing's Disease, and Arrhenoblastoma'. Dr. Edward B. Shaw, San Francisco, discussed communicable diseases before the Sonoma County Medical Society in Santa Rosa, January 9.

DISTRICT OF COLUMBIA

Medical Bills in Congress—S. 3514 has passed the Senate, proposing to regulate the manufacture, dispensing, sale and possession of narcotic drugs in the District of Columbia. H. R. 8437 has passed the Senate directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice medicine to Dr. Arthur B. Walker.

FLORIDA

Personal—Dr. Paul G. Shell, Marianna, health officer of Jackson County, has resigned to accept a similar position with the health unit in Duval County; he will be succeeded by Dr. Frank V. Chappell, medical officer of Jacksonville.

Society News—At a meeting of the Pinellas County Medical Society in St. Petersburg, January 3, the speakers were Drs. John A. Hardenbergh on 'The Heart During Pregnancy', Albert R. Frederick on 'Addison's Disease', and Norval M. Marr on 'Electrocardiographic Observation'. The society was addressed February 7 by Drs. Wyman W. Harden on 'Some Phases of Gynecology of Interest to General Practitioners', William E. Quicksall, 'Treatment of Otitis Media in Children', and George Lochner, 'Medical Ethics in Review'. At a meeting of the Duval County Medical Society in Jacksonville, January 7, Dr. Harry B. McEuen discussed 'Carcinoma of the Larynx' and Dr. Irving J. Strumpf, 'Pneclitis in Pregnancy'.

GEORGIA

Accidental Deaths—Deaths from accidents in Georgia showed an increase of 202 per cent during the ten year period 1925-1934, with automobiles heading the list of causes according to the state health department. In 1934 there were 2,251 accidental deaths, of which automobiles were responsible for 802 including fatalities from collisions of automobiles with other vehicles. The deaths attributed to automobiles alone totaled 644 in 1934, as compared with 348 in 1925.

ILLINOIS

Society News—At a meeting of the Henry County Medical Society in Cambridge February 13, Dr Ford K Hick, Chicago, discussed pneumonia and Dr Charles M McKenna, Chicago, prostaticitis. Dr Harry E Mock, Chicago, discussed skull fractures before the Whiteside County Medical Society in Sterling, February 20. Dr James H Hutton, Chicago, addressed the Champaign County Medical Society, February 13, on 'Gland Therapy and Hypertension'. At a meeting of the La Salle County Medical Society in Mendota January 30 Carlos I Reed, Ph.D., and Dr Carroll W Stuart both of Chicago discussed "Concentrated Vitamin D in Treatment of Arthritis and 'Diseases of the Mouth and Their Relation to Systemic Disease' respectively.

Chicago

Clinical Meeting—The Institute of Traumatic Surgery will hold an all day clinic session at St Luke's Hospital, March 15, commencing at 9 a.m. Cases will be presented in the morning. The guest speaker in the afternoon will be Dr Roger Anderson, Seattle, who will discuss "Ambulatory Methods of Treating Fractures of the Shaft of the Femur and Functional Method of Treating Fractures of the Shaft of the Humerus." A dinner in honor of Dr Anderson will be held at the Palmer House in the evening.

Society News—Dr Jerome R Head, among others addressed the Chicago Pediatric Society, February 18, on "Posture in the Etiology, Prophylaxis and Treatment of Diseases of the Lung." Dr Alfred J Kobak discussed 'Maternal Deaths from Abortion in 1934' before a meeting of the maternal welfare committee of the Chicago Gynecological Society, February 18. Speakers before the Chicago Gynecological Society, February 21, included Drs Garwood C Richardson on "Significance of the Fetal Heart Tones and Uterine Firmness in Abruptio Placentae," Clyde J Geiger, 'Benign and Malignant Polyps of the Cervix Uteri' and Marshall W Field 'Spontaneously Occurring Painless Labor in the Absence of Neurologic Diseases'.

Ambulances to Be Equipped with First Aid Splints—An ordinance has been passed by the city council requiring all ambulances to be equipped with first aid and splint appliances. Funds for this purpose are to be expended by the police, fire and health departments. Supplies are to be obtained from funds in the present budget and the personnel will be trained by the physicians of the various departments. Men are to be selected for this work and a sufficient number trained to make them adept and to supply at least one for each vehicle equipped. The equipment will include half-ring Thomas leg and half-ring Thomas arm splints, a few muslin bandages and some adhesive tape. The splints are to be kept in a small bag suspended from the side or top of each vehicle. The plan was originally sponsored by Dr Kellogg Speed.

IOWA

Personal—A dinner was recently given by the Greene County Medical Association in honor of Drs William M Young, Jefferson, who has practiced fifty-three years, Benjamin C Hamilton, Jefferson, fifty-two years, and John H Shipley, Rippey, forty-seven years.

Society News—Dr Maurice C Hennessy, Council Bluffs, among others addressed the Cass County Medical Society in Atlantic January 10, on 'The Social Security Act as It Affects the Medical Profession'. Dr John F Noble, St Paul, discussed 'Heterophile Antipneumococcus Serum Therapy in Lobar Pneumonia' before the Cerro Gordo County Medical Society in Mason City, January 21. Among others, Dr John A Thorson, Dubuque, addressed the Clayton County Medical Society in Elkader, January 7, on 'The Management of Sinusitis in Children'. Speakers before the Crawford County Medical Society in Denison January 14 were Drs Anthony L Fink, Carroll, on 'Ambulatory Treatment of Diseases of the Rectum' and Raymond C Scannell, Vail, 'Peptic Ulcer and Its Treatment'. A symposium on arterio-

sclerosis and cardiovascular renal disease was presented before the Dubuque County Medical Society January 14, in Dubuque by Drs Frank P McNamara, Henry G Langworthy, Laurence E Cooley and Walter Cary. Dr Lee R Woodward, Mason City, discussed 'The Anemias' before the Hardin County Medical Society in Eldora, January 21. Speakers before the Pottawattamie County Medical Society in Council Bluffs, January 27, were Drs Arnold L Jensen, 'Bilateral Empyema in a Child', Jack V Treynor, 'Chronic Labyrinthitis', and Aldis A Johnson, 'Diverticulitis'. Dr Howard L Beye, Iowa City, discussed conditions requiring surgery following cholecystectomy.

KANSAS

Cancer Control Program—The committee on the control of cancer of the Kansas Medical Society will sponsor a program throughout the state, March 31-April 4. Scientific sessions will be held in the afternoon for members of the state society and their guests, and public meetings in the evening. No admission will be charged. Speakers will be Drs Burton T Simpson, director, State Institute for the Study of Malignant Diseases, Buffalo, Charles F Geschickter, head of the department of surgical pathology, Johns Hopkins University, Baltimore, and Frank L Rector, Evanston, Ill., field representative American Society for the Control of Cancer. These sessions will be held in Chanute March 30, Wichita March 31, Dodge City April 1, Hays April 2, Salina April 3, and Topeka April 4.

LOUISIANA

Society News—The Seventh District Medical Society was addressed in Opelousas, December 12, by Drs Bernard G Efron, on management of asthmatic symptoms, Arthur Neal Owens, plastic surgery, and Curtis H Tyrone, diagnosis of early carcinoma of the cervix. All were from New Orleans. Dr Hilliard E Miller presented a case of hydatid cyst of the uterus before the Orleans Parish Medical Society, February 10. Drs Walter E Levy and Harry Meyer presented an Analysis of the Touro Infirmary's Obstetrical Service for the Year 1935 Based on a New Record System, and Drs Abraham L Levin and Morris Shushan, a paper on 'Value of the X-Rays in the Interpretation of Gastro-Intestinal Disease'. The society recently adopted resolutions to sponsor a safety campaign.

MASSACHUSETTS

New Professor of Biological Chemistry—Dr Cyrus H Fiske, since 1929 associate professor of biochemistry at Harvard Medical School Boston has been appointed professor. Dr Fiske graduated in medicine at Harvard in 1914. After one year as assistant at his alma mater, he served at Western Reserve University School of Medicine, Cleveland, until 1918 when he returned to Harvard.

Anniversary Volume in Honor of Dr Christian—At the regular clinical pathologic conference in the Peter Bent Brigham Hospital Boston February 17, Dr Henry A Christian, physician-in-chief at the institution was presented with a volume of medical papers dedicated to him by his former students, colleagues and house officers, as a token of affection on his sixtieth birthday. The presentation was made by Dr Francis G Blake, Sterling professor of medicine Yale University School of Medicine, New Haven. The volume contains 1,000 pages of papers on many phases of internal medicine. About half of the articles represent original research. The few copies available may be obtained from Dr Robert T Monroe at the Peter Bent Brigham Hospital. Dr Christian is also Hersey professor of the theory and practice of physic at Harvard Medical School.

Course in Automobile Control to Reduce Accidents—Regular graduate courses on automobile traffic control will be started next fall by the Harvard University bureau for street traffic research in a scientific attack on automobile accidents. The New York Times reported January 21. This is said to be the first move along this line by any university. Fifteen fellowships of \$1,200 each will be awarded to college graduates interested in traffic control engineering. In the announcement of the plan it was said that the current loss of life and the serious social and economic consequences of the traffic problem make it one of national importance and certainly one which is a very proper subject for university research and professional training. College graduates not more than 35 years old are eligible. Those now holding positions in fields related to street traffic control will be accepted on a leave of absence basis so that they may return to their positions after the period of study Sept 28, 1936 to June 18, 1937. Each fellowship will have extra provision up to \$200 for travel and field expense, it was stated.

MICHIGAN

Dr Doan Will Give Beaumont Lectures—Dr Charles A. Doan, professor of medicine and director of research, Ohio State University College of Medicine, Columbus, will deliver the Beaumont Lectures for 1936 at the Institute of Arts March 23-24. The illustrated lectures will be on "The Histopathology of the Blood." The series is sponsored by the Wayne County Medical Society.

Society News—Dr Charles H. Peckham, associate professor of obstetrics, Johns Hopkins University School of Medicine, Baltimore, addressed the Wayne County Medical Society, February 3, under the auspices of the Detroit Obstetrical and Gynecological Society, his subject was "The Incidence, Differential Diagnosis and Immediate and Remote Prognosis of the Toxemias of Late Pregnancies."—Dr Lowell S. Selling, Detroit, discussed "The Doctor Looks at Crime" and Judge John V. Brennan "Criminology" at a meeting of the West Side Medical Society, Detroit, in January.—Dr Sanford R. Gifford, Chicago, discussed treatment of detachment of the retina before the Detroit Ophthalmological Society, February 5.—Dr John R. Birch presented a paper before the Detroit Otolaryngological Society, January 15 on "Laryngeal Obstruction."—Dr Hans A. Jarre exhibited a new method of irradiating the petrous apex and nasal sinuses.—Dr Clarence A. Neymann, Chicago, discussed "Psychoanalysis and Its Application to the New Neuroses and Psychoses" before the Calhoun County Medical Society, Battle Creek, February 4.—Dr Albert C. Furstenberg, Ann Arbor, will address the society, March 3 on "Acute Infection of the Throat and Soft Tissues of the Neck."—Dr Louis I. Foster, Bay City, was elected chairman of secretaries of county medical societies at the annual secretaries' conference in Lansing, January 26.

MISSOURI

University News—Washington University School of Medicine, St. Louis, offers a week's intensive training in ophthalmology and otolaryngology, March 2-7. Only qualified specialists in these fields will be accepted. Information may be had from the dean of the school.

Bill Introduced—S. 292 proposes (1) to authorize the insurance commissioner to license any person, firm, association or corporation to engage in the business of a hospital service association or corporation, or the business of making contracts in advance of sickness or illness, to furnish or pay for hospitalization and (2) to exempt such licensees from the provisions of the insurance laws.

Physicians Honored—Tribute was paid to three physicians at a dinner recently given by the staff of the Independence Sanatorium, Independence, in honor of their many years of practice in the community. The three physicians were Drs. Oliver C. Shelev, who has practiced forty-six years in Independence, Calvin Atkins, thirty years, and William E. Messenger, twenty-eight years, according to newspaper accounts. Dr. Charles F. Grabske, president of the sanatorium, presided and speakers included William Southern Jr., editor of the Independence *Examiner*.

Lectureship in Honor of Dr. Loeb—A lectureship has been established by the Mu chapter of the Phi Beta Pi Medical Fraternity in honor of Dr. Leo Loeb, Edward Mallinckrodt professor of pathology, Washington University School of Medicine, St. Louis. Under the Leo Loeb Lectureship, medical scientists of distinction will be invited each year to address the students and faculty of the school; the lectures to be open to all members of the university and to the medical public. The first lecture will be given early in March. Dr. Loeb graduated from the University of Zurich Faculty of Medicine. He has been associated with Washington University since 1915 and has been professor of pathology since 1924. From 1910 to 1912, Dr. Loeb was chairman of the Section on Pathology and Physiology of the American Medical Association.

Medicomilitary Symposium—The Spring Medicomilitary Symposium will be held at the Municipal Auditorium in Kansas City, March 9-10, under the direction of Col. Kent Nelson, seventh corps area surgeon, and Lieut. Comdr. Lincoln Humphreys, representing the surgeon general of the navy. The morning sessions will be devoted to twenty-minute addresses by clinicians of Greater Kansas City; the afternoons will be given to two clinic periods followed by instruction periods for reserve officers of the army and navy. The evenings will be divided between clinical lectures and military addresses. Guest speakers will include Dr. Ernest Sachs, professor of clinical neurologic surgery, Washington University School of Medicine, St. Louis, on "Classification and Management of Head Injuries," and Dr. Edward F. Roberts, New York, who will present

motion pictures on "Management of Pneumonia" and "Pernicious Anemia: Diagnosis, Treatment and Results." Programs in surgical technique are being arranged by Dr. Max Goldman at several hospitals for Wednesday. The symposium is open to all regular physicians; no fee will be charged.

NEW JERSEY

Society News—Dr. Henry A. Rafsky, New York, addressed the Bayonne Medical Society, January 20, on "Non-surgical Treatment of Pyloric Obstruction as a Result of Peptic Ulcer."—Dr. Israel Strauss, New York, addressed the Bergen County Medical Society, Hackensack, February 11, on "Neurologic Signs and Symptoms for the General Practitioner."—Dr. David M. Davis, Philadelphia, addressed the Atlantic County Medical Society, Atlantic City, February 14, on "Prostatic obstruction."—Dr. Ernest A. Spiegel, Philadelphia, addressed the Academy of Medicine of Northern New Jersey, Newark, January 14, on "Convulsive Disorders."—Dr. Carl Eggers, New York, discussed "Surgical Conditions of the Stomach" before the Hudson County Medical Society, Jersey City, February 4.

Bills Introduced—A. 158 to amend the workmen's compensation act, proposes that no physician employed in the Department of Labor or by the State Rehabilitation Commission shall during his employment accept or participate in any fee from any insurance company authorized to write workmen's compensation insurance or from any self-insurer, whether such employment or fee relates to a workmen's compensation claim or not. A. 180 proposes in effect, that the statute of limitations shall not start to run against a patient on any claim or right of action he may have against a physician for malpractice until such time as the patient has knowledge of the injury alleged to have been inflicted on him by his physician. A. 185 to amend the workmen's compensation act, proposes to make it easier for employees to recover compensation for hernias allegedly due to employment. The bill proposes that where there is traumatic hernia resulting from the application of force directly to the abdominal wall, either puncturing or tearing the wall, compensation will be allowed. In all other cases compensation will be allowed when there is a preponderance of proof that the hernia was caused by such sudden effort or severe strain: (1) that the descent of the hernia followed within twenty-four hours of the cause, (2) that there was severe pain in the hernial region, (3) that the employee was compelled to cease work within twenty-four hours, (4) that the condition was of such severity that it was noticed by the workman and communicated to the employer within forty-eight hours after the occurrence of the hernia, (5) that there was such physical distress that the attendance of a licensed physician was required within forty-eight hours after the occurrence of the hernia. A. 195, to supplement the pharmacy practice act, proposes to authorize the courts, on the application of the board of pharmacy, to restrain the unlicensed practice of pharmacy or other violations of the act. A. 395 proposes to authorize the sexual sterilization of certain socially inadequate persons, whether inmates of state institutions or not.

NEW YORK

New School Health Director—Hiram A. Jones, Ph.D., director of physical education in the state department of education for the past four years, has been appointed director of school health and physical education, having made the highest rating in a civil service examination. Dr. Jones, 36 years old, is a graduate of Allegheny College, Meadville, Pa., and received the degree of doctor of philosophy from Columbia University. He will have charge of health and physical education activities in schools throughout the state.

Augustus Downing Dies—Augustus S. Downing, LL.D., for many years an official of the New York State Education Department, died at his home in Albany, February 5, aged 79. In his capacity as assistant state commissioner of education and director of professional education, Dr. Downing was active in obtaining the passage of the state medical practice act. According to the *Albany Times Union*, the law was defeated in the legislature thirteen times before it was enacted in 1926. Dr. Downing was made deputy commissioner of education and in 1927 he retired from active work. Several colleges had conferred honorary degrees on him.

Committee to Study Suicide—The "Committee for the Study of Suicides" was recently chartered in Albany by a group of psychiatrists and others to conduct research into causes and possible prevention of self-destruction. Dr. Gerald R. Jamieson, clinical director of Bloomingdale Hospital, White Plains, is president. Mr. Marshall Field, New York, vice president, and Dr. Gregory Zilboorg, New York, secretary, and

director of research. Other members are Drs Franklin G Ebaugh, Denver, Henry Alsop Riley, Dudley D Shoenfeld, Herman Nunberg and Bettina Warburg, all of New York, Miss Elizabeth G Brackett, social worker, New York, and Mr Barklie McKee Henry, president of the Association for Improving the Condition of the Poor, New York.

Bills Introduced—S 898 proposes to create a state board of opticians and to regulate the practice of opticians. The bill defines as an optician "a person who holds himself out as being able to produce or reproduce optical instruments, or one who deals in optical instruments or eyeglasses prescribed for the treatment, improvement or correction of the vision, or who can reproduce or duplicate existing lenses of any character of the same foci in any form, who is skilled in the science of optics, treating with the nature and properties of light and vision, and who deals in optical instruments, eyeglasses and essential parts thereof. Superintends grinding of lenses for eyeglasses to precise geometrical form to correct visual abnormalities of the human eye and possesses the ability and skill to make accurate eye, facial measurements adapted in fitting and adjusting the eyeglasses as prescribed by the eye physician, known as oculist or optometrist or duly licensed optometrist for the treatment, improvement and corrective effect of vision." S 918 and A 1134 propose that the provisions of the pharmacy practice act shall not apply to the sale of drugs, medicines, chemicals, prescriptions or poisons at wholesale when not for the use or consumption of the purchaser provided, however, that no manufacturer or wholesaler may sell any drug, medicine, chemical, prescription or poison containing poisonous, deleterious and/or habit forming drugs to any person or corporation unless such person or corporation has been duly authorized to sell such drug, medicine, chemical prescription or poison at retail." S 988 and A 1170 propose to grant to charitable and to governmental hospitals treating persons injured through the negligence of others liens on any judgments, awards, compromises or settlements accruing to the injured persons because of their injuries.

New York City

Annual Art Exhibit—The New York Physicians Art Club will hold its annual exhibit, April 4-18 at the New York Academy of Medicine. Exhibits must be delivered at the academy before March 14. Checks for \$6 made out to Dr Winfred Morgan Hartshorn for the 1936 assessment must be mailed to Dr Louis C Schroeder, 50 East Seventy-Second Street, secretary of the club.

Society News—Dr Leonard Greenburg of the division of industrial hygiene, state department of labor, Albany, addressed the Bronx County Medical Society, February 19, on "Industrial Diseases and Their Relation to the New Compensation Law."—Drs William Edward Chamberlain, Philadelphia, and William P Healy addressed the Medical Society of the County of Kings, February 18, on "Radiation Therapy in Cancer" and "Deep X-Ray Therapy in Pelvic Neoplasms," respectively.

Program on Effects of Noise—The Medical Society of the County of New York devoted its meeting February 24 to consideration of the effects of noise on health. Dr Edmund Prince Fowler discussed the effects of noise on the normal and the abnormal ear, Dr John L Rice, health commissioner and Dr Sigismund S Goldwater, commissioner of hospitals, the effect on public health. Dr Foster Kennedy, the effect from the neurologic point of view. Harvey Fletcher, Ph D of the Bell Telephone Laboratories presented a demonstration of various noises showing their loudness in decibels.

Friday Afternoon Lectures—The Medical Society of the County of Kings announces the following lectures in its Friday afternoon series:

Dr Leonard G Rowntree Philadelphia Relationship of the Thymus and Pineal Gland March 6
Dr Hugh H Young, Baltimore The Prostate March 13
Elmer V McCollum Sc D Baltimore Vitamins March 20
Dr Louis E Phaneuf Boston Gonorrhea: Its Partial, Partial and Tuberculous Pelvic Infection—Its Prevention and Treatment March 27
Dr Rela Schick Childhood Tuberculosis April 3
Dr Russell M Wilder Rochester, Minn, spoke on "Hypoglycemia" February 28

Professor of Psychiatry Appointed—Dr Oskar A Diethelm, associate psychiatrist at Johns Hopkins Hospital Baltimore has been appointed professor of psychiatry at Cornell University Medical College and psychiatrist in chief to New York Hospital to succeed Dr George S Amsden, who retired in 1935. Dr Diethelm who is 38 years old was born in Switzerland and was graduated in medicine from the University of Zurich Faculty of Medicine in 1922. He went to Johns

Hopkins in 1925 as house officer in the Phipps Psychiatric Clinic and two years later was appointed resident psychiatrist. In 1932 he was appointed associate professor of psychiatry at Johns Hopkins University School of Medicine.

OHIO

Society News—At a meeting of the Toledo Academy of Medicine, February 7, speakers were Drs Benjamin W Patrick, on embolism, with a discussion of the possibility of prevention, and James B Rucker Jr, on pathology of embolism and thrombosis. Dr Albert Graeme Mitchell, Cincinnati will give a graduate course in practical pediatrics, March 25-27, at the academy building.

Faculty Changes at Cincinnati University—Dr Carey P McCord, associate professor of preventive medicine at the University of Cincinnati School of Medicine since 1920, has resigned, according to the *Journal of Medicine*. At the January meeting of the board of directors the 'William D Porter Professorship in Obstetrics' was created, in memory of the late Dr Porter, for many years professor of clinical obstetrics. Dr Henry L Woodward, for many years associated with Dr Porter as professor of obstetrics, was appointed to the new professorship. Dr Porter died Sept 27, 1935.

Public Health Lectures in Cincinnati—The Academy of Medicine of Cincinnati and the University of Cincinnati College of Medicine are sponsoring a series of public health addresses for the public Sunday afternoons. Dr William Muhlberg, medical director Union Central Life Insurance Company gave the first February 23, on "Preventive Medicine. Following are the rest of the series:

Dr Alfred Friedlander dean of the college of medicine Your Heart Its Care in Health and Disease March 29
Dr Richard S Austin professor of pathology Cancer April 26
Dr Emeron A North professor of psychiatry Mental Health May 27

OREGON

Society News—Dr Frank R Menne, Portland, addressed a joint meeting of the Multnomah County Medical Society with the University of Oregon Medical School Seminar, January 22 on "Recent Advances in the Study of the Cause of Cancer."—Dr Matthew C Riddle, Portland, addressed the Lane County Medical Society Eugene, December 20, on "The Anemias Their Diagnosis and Treatment."

Graduate Course in Ophthalmology and Otolaryngology—The Oregon Academy of Ophthalmology and Otolaryngology and the University of Oregon Medical School will sponsor a week of intensive work in those subjects March 30-April 4 at the medical school. Drs John E Weeks and Frank R Menne Portland will supervise a course in ocular pathology and Olof Larsell Ph D, a course in dissection of the head and neck. Lectures and clinics will be given by Drs Harry S Gradle Chicago William L Benedict Rochester, Minn William P Wherry, Omaha and Dean M Lierle Iowa City. Information may be obtained from Dr Augustus B Dykman Medical Dental Building Portland.

PENNSYLVANIA

Society News—Dr Arthur G Davis, Erie addressed the Erie County Medical Society, January 8 on "Progress in Treatment of Fractures of the Spine."—A symposium on socialization of medicine made up the program of the Lycoming County Medical Society, February 14, at Williamsport. Speakers were Drs John P Harley, Williamsport, on hospital insurance plans, La Rue M Hoffman, Williamsport, the Epstein bill, Frederic C Lechner Montoursville, compulsory sickness insurance in Germany, and Wilbur E Turner Montgomery, compulsory sickness insurance in England.—Dr Damon B Pfeiffer, Philadelphia addressed the Montgomery County Medical Society, Norristown, February 5, on "Surgical Diseases of the Colon and Rectum."—Dr B B Vincent Lyon, Philadelphia addressed the Lehigh County Medical Society, Allentown, February 11, on "Diagnosis and Medical Management of Cholecystitis."—Dr Ralph M Tyson, Philadelphia discussed "Problems in Infant Feeding" before the Cambria County Medical Society, Johnstown, February 13.

Philadelphia

Symposium on Diabetes—The meeting of the Philadelphia County Medical Society, February 26, was devoted to a symposium on diabetes with the following speakers: Drs Elliott P Joslin Boston "Trauma in Relation to Diabetes," Russell Richardson, "Immunity in Diabetes," and Cyril N H Long, Pituitary, Adrenal and Pancreatic Diabetes." Dr Long presented a motion picture on "The Effects of Hypophysectomy and Adrenalectomy upon Pancreatic Diabetes."

Committee to Investigate Mental Hospital—The mayor of Philadelphia has appointed a committee of physicians to investigate conditions at the Philadelphia Hospital for Mental Diseases and make recommendations for improvement. Dr. Wilmer Krusen is chairman and members are Drs. Frederic H. Leavitt, George C. Yeager, Malachi W. Sloan, Alfred Stengel, Frederick H. Allen, Paul J. Pontius, Edward A. Steinhilber, Ruth H. Weaver and Dorothy C. Blechschmidt.

University News—The residuary estate of the late Dr. Delno A. Kercher, amounting to about \$116,000, was awarded to the University of Pennsylvania School of Medicine, January 29. The will specified that the bequest was to be used for a loan fund for students in the medical school after their first year, graduate students and research workers. Dr. Walter Bradford Cannon, George Higginson, professor of physiology, Harvard Medical School, Boston, delivered the Alpha Omega Alpha Lecture at Jefferson Medical College, February 14. Dr. Cannon's address was entitled "Serendipity." The William Potter Memorial Lecture was delivered at the college, February 7, by Dr. Dean Lewis on "Epochs in the Development of Surgery."

VIRGINIA

Health at Richmond—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended February 15, indicate that the highest mortality rate (241) appears for Richmond and the rate for the group of cities as a whole, 139. The mortality rate for Richmond for the corresponding week of 1935 was 182 and for the group of cities 126. The annual rate for the eighty-six cities for the seven weeks of 1936 was 134, as against a rate of 131 for the corresponding period of last year. Caution should be used in the interpretation of these weekly figures as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

Society News—The Northampton County Medical Society was addressed, January 3, by Drs. James Morrison, Hutcheson and Beverley R. Tucker, Richmond, on "The Rationale of the Application of Certain Surgical Measures to the Relief of Hypertension" and "Neurological Aspects of Pellagra" respectively. At a meeting of the Patrick-Henry Medical Society in January in Bassetts, Dr. John E. Gardner, Roanoke, spoke on diseases of the chest. Dr. Frederick M. Hodges, Richmond, discussed "Roentgen Therapy" before the Lynchburg Academy of Medicine, January 6. At a meeting of the Roanoke Academy of Medicine, January 6, speakers were Drs. Charles A. Young, "Interpretation of Changes in the Eye Grounds," John E. Gardner, "Normal and Pathological Considerations," and Harry Golston, "Clinical Significance of Auricular Fibrillation with Electrocardiograms."

WASHINGTON

Medical Museum—A collection of antiquated surgical instruments, assembled by the Puget Sound Surgical Society, will serve as the nucleus for a medical museum in Seattle, the *Bulletin* of the King County Medical Society announces. Dr. Karl H. Van Norman, superintendent of the King County Hospital, Seattle, has assigned space on the twelfth floor of the institution for the collection, and Dr. Joel W. Baker will supervise it. Contributions for the museum, which is being sponsored by the surgical society, are being solicited.

Society News—Drs. Frederick R. Fischer and Otto M. Rott, Spokane, addressed the Yakima County Medical Society, Yakima, January 12 on "Mesenteric Adenitis in Children" and "Methods of Procedure in Diagnosis of Intracranial Complications of Ear Diseases" respectively. Dr. Ralph A. Fenton, Portland, Ore., addressed the Walla Walla Valley Medical Society, Walla Walla, January 9 on "Nose, Ear and Throat Conditions from the General Practitioner's Viewpoint." Dr. William W. Mattson, Tacoma, addressed the Pierce County Medical Society in Tacoma, January 14 on "The Evolution of Blood Transfusion."

WISCONSIN

Society News—At a meeting of the Eau Claire County Medical Society, Eau Claire, January 27, speakers were Drs. Joseph W. Gale, Madison, on "Surgical Treatment of Pulmonary Tuberculosis," Arthur G. Sullivan, Madison, "Medical and Legal Medicine," and Roy E. Mitchell, Eau Claire, "Ten Minutes of Medical News." Dr. William J. Bleckwenn, Madison, addressed the Fond du Lac County Medical Society, Fond du Lac, January 25, on "Brain Injuries: Their Diagnosis

and Treatment." Dr. Louis A. Buie, Rochester, Minn., addressed a joint meeting of the Kenosha and Racine County medical societies, January 16, on "Proctology for the General Practitioner, the Internist and the Surgeon." Drs. Carl S. Williamson, Green Bay, and Matthew A. McGarty, La Crosse, among others, addressed the Milwaukee Society of Clinical Surgery, January 28, on "Subphrenic Abscess as a Complication of Biliary Tract Infection and Surgical Intervention" and "Rationale of the Injection Treatment of Hernia" respectively. Dr. Louis A. Fuerstenau, Milwaukee, was elected president and Dr. William J. Carson, Milwaukee, secretary.

GENERAL

Medical Bills in Congress—*Bill Introduced*—H. R. 11171 introduced by Representative Kramer, California, proposes to authorize an appropriation of such sum as may be necessary to provide for the enlargement of the Veterans Administration hospital at San Fernando, Calif.

Microscope Stolen—The North End Clinic, Detroit, announces that a Leitz-Wetzlar microscope was stolen from the clinic's laboratory, January 27 or 28. The microscope number is 302173, with oil objective number 150362. It has a high dry and low power lens mounted in the triple nose piece, ocular $\times 10$, Abbe condenser, no substage mirror and bears a detachable uncalibrated mechanical stage. It is reported that a gang in Detroit has been stealing microscopes and shipping them to distant points for disposal. Any information on this instrument should be communicated to Mrs. Eleanor J. Ford at 936 Holbrook Avenue, Detroit, director of the clinic.

States Act to Control Water Pollution—New York and New Jersey entered into a compact, January 24, to control pollution of water in the metropolitan area of New York. This action is the outgrowth of the work of a Tri-State Treaty Commission appointed by the legislatures of New York, New Jersey and Connecticut in 1931. The compact was drawn up and presented for action by the legislatures in 1932. It was enacted into law in New York in that year to become effective when ratified by New Jersey, the latter state passed its enabling law in 1935. The compact will become effective with respect to Connecticut as soon as that state enacts similar legislation. Briefly stated, the aims of the compact are to eliminate offensive pollution, to make beaches safe for swimming and recreational purposes, and to return certain areas now condemned to shellfish culture. The pact was approved by Congress in August 1935.

Meeting of Tuberculosis Association—The thirty-second annual meeting of the National Tuberculosis Association will be held at the Municipal Auditorium in New Orleans, April 22-25. The preliminary announcement mentions the presentation of papers by authorities and, in addition, a symposium on tuberculosis among different peoples, covering Negroes in the United States and racial aspects of tuberculosis in Mexico and Puerto Rico, with the following physicians as speakers: Esmond R. Long, Philadelphia; Donato Alarcon, Mexico City; Jose Rodriguez Pastor, San Juan, P. R.; and Paul P. McCum, Sanatorium, N. C. Dr. Alarcon will also deliver an address at the opening general session, Wednesday evening, entitled "The Campaign Against Tuberculosis in Mexico." The National Conference of Tuberculosis Secretaries will meet at the Roosevelt Hotel, Wednesday, April 22, with Dr. Kendall Emerson as the speaker on "Recruiting and Training Tuberculosis Workers." The administration and function of tuberculosis associations will be the theme of a symposium at this meeting.

Society News—Dr. Richard Kovacs, 1100 Park Avenue, New York, is executive of the American committee for the International Congress on Physical Medicine, which will be held in London, May 12-16. American participants will sail from New York on the *Britannic* and return May 31 on the *Pennsylvania*. Dr. John A. C. Colston, Baltimore, was elected president of the Mid-Atlantic branch of the American Urological Association at the second annual meeting in Washington, D. C., January 23. The American Physiotherapy Association, an organization of physical therapy technicians, will hold its annual meeting at the Hotel Ambassador, Los Angeles, June 28-July 2. The second Congress of the Pan-Pacific Surgical Association will be held in Honolulu, T. H., August 6-14. The American Physical Education Association will hold its annual meeting in St. Louis, April 15-18. At a meeting of the midwestern section of the American Congress of Physical Therapy in Rochester, Minn., March 4-5, speakers will include Dr. Melvin S. Henderson, Rochester, on "Physical Therapy in Relation to Orthopedics," Dr. John S. Coulter and Howard A. Carter, B. S. secretary, Council on Physical

Therapy, American Medical Association, Chicago, "Studies in Tissue Heating with Short Wave Diathermy" and Dr. Disraeli W. Kobak, Chicago, "Influence of Short Wave Diathermy on the Blood." A symposium on arthritis will be presented by Drs. Ralph K. Ghormley, Philip S. Hench, Charles H. Slocomb and Frank H. Krusen, all of Rochester. The National Society for the Advancement of Gastro-Enterology will hold its annual meeting in Atlantic City, June 5, with headquarters at Haddon Hall. The National Congress of Parents and Teachers will hold its annual convention in Milwaukee May 11-15.

Government Services

Meat Inspection Chief Dies

Adolph J. Pistor, D.V.S., chief of the meat inspection division of the Bureau of Animal Industry, U.S. Department of Agriculture, died in Washington January 25, aged 59. Dr. Pistor entered the service of the bureau in 1898. He took an active part in the organization of the meat inspection service after the passage of the federal law in 1906 and later was assigned to administrative duties in Washington. He became chief of the service Jan. 1, 1935.

Tribute to Dr. Cumming

In a discussion of the Treasury and Postoffice Appropriation Bill, 1937, on the floor of Congress, February 5, Mr. John J. Boylan, congressman from New York, gave a brief outline of the career of Dr. Hugh S. Cumming, recently retired surgeon general of the U.S. Public Health Service. Mr. Boylan said:

I venture to express the opinion that many members of this house regret the retirement of the surgeon general from active duty. Many of us should take this opportunity to express gratitude for the excellent work which he has performed for this nation. I am sure that he will have that happiness and contentment which comes to every man whose services have been honestly and faithfully performed.

Twenty-One States Share First Social Security Grants

United States Treasury checks representing the first social security grants to states for assistance in their aid to the aged, the blind and to dependent children, were in the mails February 13. Among the first checks sent were:

To Arizona	\$ 4,725 00
To Connecticut	2,520 00
To District of Columbia	9,450 00
To Idaho	6,300 00
To Maine	26,250 00
To Mississippi	8,820 00
To Nebraska	15,540 00
To New Hampshire	5,040 00
To North Carolina	3,324 99
To Wisconsin	52,149 99
To Wyoming	4,161 40

In states the public assistance plans of which are approved by the Social Security Board, the federal government will match state funds dollar for dollar in the case of aid to the needy aged and the blind, and one dollar for each two dollars disbursed by the states for aid to dependent children. An additional 5 per cent of the federal grants to states for old age assistance and aid to the blind will be paid to the states to share the cost of the administration of these two forms of public assistance.

The twelve states with approved plans for aid to the blind are:

Arizona	Maine	North Carolina
Connecticut	Mississippi	Pennsylvania
District of Columbia	Nebraska	Wisconsin
Idaho	New Hampshire	Wyoming

In addition to the states which have had one or more public assistance plans approved, a number of other states have submitted their public assistance plans for approval by the board, and still other states are expected to do so shortly.

To be approved by the Social Security Board, under the terms of the Social Security Act, state public assistance plans must provide for cash payments to needy aged persons, to dependent children living in their own homes or the homes of relatives, and to the needy blind, in all parts of the state. A single state agency must administer the plan or supervise its administration if the plan is directly administered by the counties. This state agency must grant the opportunity for an appeal from any decision of a county denying assistance to an applicant.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 22, 1936

Report of Cancer Research Fund

In the annual report of the Imperial Cancer Research Fund the retirement of the director, Dr. J. A. Murray, who had occupied his post since 1915, the second year of the inception of the fund, is recorded. With Dr. Bashford he laid the foundation for the experimental investigation of cancer by proving that it is not confined to man, as was at one time believed. The material they collected on the natural incidence of cancer in mice provided investigators with a knowledge of the disease in this species equal to that in man. It enabled Dr. Murray subsequently to demonstrate the hereditary factor of the disease. He confirmed the observations of Jensen on transplantation and showed the important fact that this was due to an actual transplantation of living cells and not to an infection of the new host by some agent separable from the cells. The subsequent discovery by Peyton Rous of tumors of the fowl which can be transmitted without the intervention of living cells led to numerous reinvestigations of Dr. Murray's early work, which have served to confirm it. Of equal importance are his investigations of the phenomena of immunity which renders a normal animal resistant against transmission of the disease by transplantation.

The new director is Dr. W. E. Gye, whose work on the pathology of cancer is well known. In his report he points out that the facts that in all vertebrates normal cells can undergo malignant transformation and that such cells possess everywhere the same fundamental properties are the foundation of the experimental investigation of cancer. Of the diseases that can be produced experimentally, few if any simulate the normal human disease so closely as cancer.

CANCER NOT INCREASING AT AN ALARMING RATE

Dr. Gye points out that the prevalent opinion of a rapid increase of cancer was based on the crude figure of total cancer mortality. Bashford analyzed cancer mortality with reference to the different organs, separating accessible sites, where the diagnosis was easy, from inaccessible sites, where the diagnosis was difficult. He found that the recorded increase fell largely, though not entirely on inaccessible sites, especially the stomach, while the skin and uterus showed no increase. Investigation of more than 10,000 cases at the London hospitals showed in the accessible sites that only 9 per cent were not recognized clinically, while the figure for inaccessible sites was 38 per cent—an astonishingly high figure for large hospitals with the most advantageous conditions for diagnosis. Thus the recorded total mortality of cancer must be much lower than the actual mortality. The greater attention paid in recent times to the clinical recognition would tend to diminish the extent of missed diagnoses and increase the recorded mortality.

EXPERIMENTAL CANCER INVESTIGATIONS

Transplantation of cancer was found to be successful only *within the species from which the tumor was derived. Hence the failure to transmit human cancer to the lower animals. The propagation of a mouse cancer in mice can be carried on indefinitely. It follows that the *primum movens* of the disease is in the cancer cell itself and successive generations of normal mice are unable to affect the malignant properties of the transplanted cells. There is an important practical deduction. The laboratories of the Imperial Cancer Research Fund are willing to investigate so-called cancer cures. But almost all the "cures" brought for examination are based on an assumption that cancers arise and grow because of some constitutional defect in the body of the patient. It has been assumed that they pro-

gress because some gland is inadequate in what is supposed to be its function of controlling growth. These "cures" have all been tested, and they have been found useless.

VIRUS CANCERS

In 1911 Peyton Rous described a spindle cell sarcoma of the domestic fowl that could be propagated not only by grafts but by cell-free filtrates. Subsequently a score or more of filtrable avian tumors of diverse structure were described. Thus there exists a group of tumors produced by intracellular agents indistinguishable from the viruses. Dr Gye therefore assigns to these agents a specific part in the genesis of tumors. The recent discovery by Shope of a filtrable papilloma of the cotton-tail rabbit has broken the apparently absolute difference in respect of filtrability between tumors of mammals and tumors of birds. Another important discovery was made by Professor McIntosh at the Middlesex Hospital. Tumors were started in fowls by injecting tar subcutaneously, and these were transplanted into normal fowls. In some cases it was found possible, once the difficulties of propagation had been overcome, to transmit the growths by means of cell-free filtrates. The part played by tar in cancer causation is thus different in kind from the part played by the filtrable agent, which can be obtained again and again from successive generations of the tumor.

Changes in the English Population

The Registrar-General's Statistical Review of England and Wales for 1933 has just been published. The estimated population in the middle of the year was 40,350,000, consisting of 19,357,000 males and 20,993,000 females. The total is 0.37 per cent greater than the estimated population for the previous year. The average age of the population is gradually increasing. In 1933 the figure for males was 32.2 years and for females 33.9. In 1931 the figures were respectively 31.8 and 33.5, in 1921 they were 29.9 and 31.2.

THE FALLING BIRTH RATE AND THE APPROACHING FALL OF POPULATION

The continuous fall in the English birth rate during the last half century is of first importance. As during all this period there has been an annual increase of population, the inevitable decline may seem paradoxical but is easily explained. It is a result of the fact that the recent birth rates are not sufficient to replace the younger persons of future generations while the more remote birth rates, which are greater, are sufficient to more than replace the older persons. Moreover the diminished death rate of recent years further maintains the older members of the population. The result is, as the figures show, a constantly aging population. The older persons, who represent former birth rates, can for a time conceal by their numbers, the serious fall of the younger. But it is on the younger members, more specifically on the number of women of the reproductive age that future population depends. These women have been reproduced for some years in sufficient number to replace those passing out of the reproductive period. If all other conditions remain exactly the same the result must be in time that the persons of every age are not replaced, which means that the whole population must fall irrespective of any further fall in the birth rate. But this is also going on. Hence the registrar general states that the reduction of the population is 'likely to come earlier than a few years ago was considered probable.'

The live births in 1933 were 580,413 or 33,559 fewer than in 1932. The birth rate was 14.4 per thousand of population, the lowest on record. Only two other countries, Austria and Sweden had lower birth rates. The rate of increase of the population was 2.1 per thousand the lowest on record. The magnitude of the fall of the birth rate is shown by the comparison with the birth rate in 1876 which was 36.3. Thus a fall of 60 per cent has taken place in the last fifty years.

Maternal Mortality

The Fellowship of Medicine arranged a debate on the motion 'That the Present Rate of Maternal Mortality Is a Discredit to Modern Obstetrics.' Leading obstetricians took part. Prof J. M. Munro Kerr said that the mortality was in no way mysterious and was due to the fact that the means at hand was not employed to prevent it. The mortality at two maternity hospitals in London, with institutional and domiciliary services, was as low as 0.7 and 1 per thousand, which was five or six times lower than the general rate for England and Wales. The death rate from eclampsia was the criterion for assessing the quality of antepartum care. In the country generally there was no evidence of lowering of this rate, while in the services mentioned death from eclampsia rarely occurred. The only solution in densely populated areas was that the family physician should give up maternity work and leave it to municipal midwives and specialists.

Prof G. I. Strachan said that since 1906 the maternal mortality had risen from 3.74 to 4.6 per thousand births. But the Netherlands was the only country of any account that could show a lower mortality than England and Wales. He gave high American figures: 10 per thousand for the state of Georgia in 1931 and 8.1 for Louisiana in 1934. He considered that the increasing incidence of abortions, the majority of which were procured, was one of the most important causes of maternal mortality. Another was the decrease in the size of the family, which meant a higher proportion of primiparas. He deprecated unnecessary intervention in labor but thought that there was no easy road to success in improving the mortality.

Professor Dougal said that the figure for maternal mortality in 1933 was 4.32 per thousand, which would be reduced to 3.7 if an estimated number of abortions were added—not an alarming mortality but higher than it should be, because many deaths could have been avoided if certain conditions were fulfilled. He considered that overcrowding of the towns was, as in the United States, responsible for our high mortality. The conduct of labor should be left to the midwife, but the general practitioner was the proper person to supervise the health of the pregnant woman and to detect abnormalities. In labor he should be available for the diagnosis of abnormalities and the treatment of those with which he was competent to deal or must deal because of urgency. For others the obstetrician should be available.

Dr Bethel Solomons, formerly master of the Rotunda Hospital, Dublin, found the present system of obstetric teaching unsatisfactory. The student was required to attend a certain number of labors, but he should be required to attend them all through and not simply at the end. No one should be allowed to practice until he had done graduate work under supervision. As long as the number of forceps interventions remained high, with the proportion of mangled and dead women and children, it could not be said that the present state of obstetrics was creditable.

Second British Red Cross Unit for Abyssinia

The response to a broadcast appeal for funds to allow further help to be sent to the Abyssinians by the British Red Cross Society has been so prompt that the dispatch of a second unit was soon announced. Another appeal for \$15,000 to enable an airplane to be presented to the Ethiopian Red Cross was also successful, sums varying from \$2.50 to 25 cents from a little box, being received.

The Australian Red Cross has asked the International Red Cross at Geneva if another ambulance outfit is needed. If so, it will consider the practicability of sending a complete unit with four physicians and ten orderlies, to be maintained by public subscription. Australia is also prepared to send funds and Red Cross equipment to Italians, if needed.

PARIS

(From Our Regular Correspondent)

Jan 17, 1936

The Pathologist and the Surgeon in Preoperative Diagnosis

By a recent decree, the government changed the name of the Societe de chirurgie to Academie de chirurgie. Now with two medical academies in France, the former members of the Societe de chirurgie probably will be allowed to wear the historic green embroidered dress coat, the pride of the academician. The Societe de chirurgie, only 92 years old was in fact the heir of the ancient Academie royale de chirurgie and it is satisfying to see this famous name restored.

At the session of Dec 11, 1935, Drs H. Welter and Rene Huguenin pointed out the advantages of preoperative diagnosis in surgery of malignant tumors. Preoperative diagnosis is an investigation similar to biopsy, made before the operation but it is a "directed biopsy." Instead of taking off a bit of a tumor at random the surgeon, guided by experience, can choose the significant parts of the pathologic tissues and have them examined at once. He can be informed of the extent of the secondary lymphatic invasion. He can, in short, benefit by every bit of information secured during the operation. On the other hand, if the clinical diagnosis was wrong the extemporaneous examination of the removed parts corrects it. This is of great importance in some cases. For instance, in a case of careful diagnosis of cancer of the thyroid reported by Drs Welter and Huguenin, ablation of the organ was averted by the report of the pathologist working in collaboration with the surgeon. His conclusions showed a simple although long-continued thyroiditis with hyperplasia. The same thing may happen in cancer of the breasts. "directed biopsy" gives an almost perfect assurance of the benign or malignant character of the tumor.

The technic of the immediate examination differs according to the organs examined. On the whole the constant collaboration of the surgeon and the pathologist in the course of the operation demands both great training and the spirit of cooperation. But, in the future, those details will be perfected and the pathologist will have his place as a matter of routine, under every thoroughly equipped surgeon.

Conference on Preventive Pediatrics

The fifth conference of the International Association for Preventive Pediatrics met in Basel, Switzerland, last September. The first topic for discussion was the arrangements to be made for keeping infectious diseases away from children's hospitals. Many opinions were expressed. They were, generally speaking, divided between the idealistic view of those who suggested perfect but often too complicated devices, and the practical views, which emphasized the difficulty of getting rid of the old type hospitals conceived on former standards and difficult as a rule to manage with modern ideas. Dr. Husler of Munich pointed out that a good location of the hospital, good air and light and an exacting technic by doctors and nurses are of great importance. Dr. Lust of Brussels is a partisan of maximum attention to detail. He thinks that the dispensaries must be absolutely separated from the wards. He is suspicious of visiting relatives and friends, whom he asks to wear blouses and masks when visiting the children. Dr. R. Debre of Paris proposes that an assistant be charged with investigation of the homes of sick children to discover infectious cases and order the necessary preventive measures before the admission of the child to the hospital. Dr. Bela Schick of New York stated that the problem is much more difficult to solve in hospitals devoted to chronic diseases than in ordinary ones. For the prevention of diphtheria it is better to practice as a routine toxoid-antitoxin immunization in

grown children or the use of antitoxin in babies. If weakly undernourished children can be treated at home, it is better not to admit them to the wards. The principal contaminations come from the environment—children, parents or hospital staff.

The conference adopted the following conclusions:

It is absolutely necessary to fight against contagious disease in hospitals by organization of proper conditions and exact supervision of the staff, the children and the things they use and touch. Management of admissions and medical care also must be exact including especially an investigation at the homes of sick children. The nurses must be specialized and as far as possible, not changed too often. Every member of the staff must be carefully examined periodically. As for the babies, the wearing of a mask is recommended, as well as limitation of visits, and the isolation of the children in the waiting rooms. Overcrowding of wards and shortage of staff are calamitous.

Another subject, reported by Dr. Genevriev of Paris, was pulmonary tuberculosis in the school. He said that tuberculosis affects one in a hundred of the schoolboys or girls. The diagnosis requires a roentgen examination and consequently must be made in the dispensaries. The infection generally originates not with children but through teachers or school employees who must be subject to periodic medical examinations. To these individual measures must be added every possible sanitary improvement of the school itself and of individual hygiene. Superinfections too often come from the family. The points emphasized were the role of the school staff in infections, masked bacillus carriers, use in the school of the cutaneous reaction test, supervision of the child outside the school, routine examination of the school staff, usefulness of the pupil's card (book), the development of open-air classes and playgrounds, the limitation of working hours and the supervision of the diet of children.

BERLIN

(From Our Regular Correspondent)

Jan 6 1936

Treatment of Detachment of Retina

After many experiments Gonin in Lausanne six years ago, made known his new method for treatment of ablatio retinae. Although much of his operative technic has been superseded by newer procedures, Gonin must be accredited with the discovery of the fact that in cases of retinal detachment a laceration is always present. Professor Lohlein spoke on this subject before the Berlin Medical Society. Ablatio occurs chiefly in myopic eyes but also in those showing senile or traumatic forms. In the first four decades of life, ablatio is much rarer than in the later years. Of forty-five cases of Lohlein's own observation, eleven patients were from 10 to 40 years of age and thirty-two from 50 to 80. If one agrees with Gonin that retinal laceration is responsible in a majority of cases so must one consider as a second cause a partial liquefaction of the vitreous humor. During the war numerous cases of traumatic retinal lacerations were observed. It is frequently difficult to determine the exact location of the laceration. Usually it lies in the periphery of the superior temporal region. There appears to be a connection between the condition of myopic as well as of senile eyes and this location which leads toward degeneration.

Gonin's procedure consists in determining the location, opening the sclera and pricking with Paquelin's cautery in the region of the laceration in order that a scab may be formed. As the exact location of the laceration is frequently difficult to determine the cautery needle may produce injuries and cicatrization may follow the scratching. Because of the crudity of the Paquelin method, other procedures have been sought that are based on the principle of determining an adhesive inflammation. Next to cauterization with alkali the most important procedure today is diathermic coagulation. Lohlein worked endlessly,

using procaine hydrochloride anesthesia, which obviated the hindrance of winking. The region of the laceration proper was "parchmentized" by a flat electrode, round about this area several perforations were made with a sharper electrode. The after-treatment is vital to success. During the first week the patient's head, completely bandaged and light tight, is not moved, then a first change of dressing takes place. Throughout the second week as well a state of quiet is maintained. During the third and fourth weeks the wearing of glasses that admit light through a narrow aperture facilitates complete cure. Professional care should be exercised for three months after the operation. Lohlein followed this procedure in forty-five cases. Of these, 42 per cent resulted in recovery. 24 per cent were improved and 34 per cent showed no improvement. Successful outcome of course is dependent on the special conditions of each separate case. In elderly persons, because of the weakness of the tissue, operation should not be attempted. Too great a loss of the vitreous humor during the operation or secondary hemorrhages often cause failure.

In regard to the prophylaxis of this condition, it would perhaps be possible to accomplish something in the course of the marriage consultation of hereditarily predisposed persons. Care should be exercised moreover in severe myopia because of the danger of traumas (the most frequent cause of detachment) from sports, especially from ball playing. Finally, it is advisable that patients with contusion of the eyeball remain in bed until, with the stopping of hemorrhage, examination may be undertaken.

The Crisis in Research on Twins

The racial political stand of the German government has as its foundation a firm belief in the importance of hereditary as opposed to environmental influences. Results of research on twins have been taken as substantiating a preponderance of hereditary predispositions. The whole structure of this theory, however has been severely shaken by the publication in the *Wiener klinische Wochenschrift* (48 868 [June 28] 1935) of an article by Professor Alfred Greil of Innsbruck which he calls "The Crisis in Pathologic Development of Twins. Etiology of Mongolian Idiocy." This article contains a plea for an entire reorientation in the field of research on twins. Not enough attention, he says, has heretofore been paid to certain essential facts of prenatal development. For him uniovular twins are a fortuitous occurrence, a minus variation due to a checking of the formation of the uniform amniotic cavity. In these separated sections the inequality of the sacs or inlets brings about a uniovular twin formation which may manifest itself in any of an uninterrupted teratogenic series of variations in deformed twins, ranging from gemini inaequales, through epistru and epignathu to teratomatous conditions of the sacral tumor, fetal inclusion or tubulodermoid types. If the amniotic sections are fairly equal, normal uniovular multifetation (from twins to quadruplets) originates. These plural fetuses have always in common the chorion vitelline sac and placenta but separate amniotic cavities that may merge into one although not necessarily.

When this explanation is accepted it follows that uniovular twins and quadruplets do not originate from the accidental splitting of the ovum itself into two or four cells. Twin formation is not fission. Accordingly uniovular twins resemble in no way linked bodies of a single fetus. Pathologic asymmetry in the single fetus as well as in uniovular twins is not determined by the nuclear genotype. All discordances develop epigenetically (that is to say influenced by environment) from absolutely homogeneous and genotypical cell material. These prenatal environmental influences are of much greater significance than the postnatal which result from training and orientation in life.

Since there are no dichorionic uniovular twins, there is added to the problem of their environmental discordance the concordance of binovular twins.

All that which influences the mother during pregnancy may influence the prenatal milieu and in addition affect hereditary tendencies the significance of which accordingly is greatly reduced. Among prenatal environmental factors may be mentioned an uneven distribution of blood through the umbilical vein as well as pregnancy toxins, exacerbated month by month and leading to cellular and histo ecologic corresponding changes.

This new conception cannot if accepted fail to influence racial-hygienic and even racial political ideology. Moreover it permits one to glimpse in the far off future the possibility of therapeutic or formative intervention in intra-uterine processes.

Mixed Marriages in Germany

In the *Reichsgesundheitsblatt* official organ of the state ministry of health, Dr. (of Philosophy) Gollner in dealing with so-called mixed marriages between Christians and Jews presents certain data on racial relationship which are not to be found as yet in the records of the marriage registries. During the World War these mixed marriages exceeded in number the marriages between Jews. Thus in 1915 to every 100 Jewish marriages there were 105 mixed marriages throughout Germany, and for Berlin the rate was 115 mixed to 100 Jewish. The fruit of these mixed marriages was 0.8 living birth against 2.7 living births among the purely Jewish. The surprising thing is that among the mixed marriages the proportionate number of males born is considerably greater than among the population as a whole. The average birth rate is 107 males to 100 females. In mixed marriages the number of males is 115. In those mixed unions in which the father was Jewish the males born number 119 when the mother was Jewish, 109.

Eggs as a Source of Food Poisoning

In the last year the German press has frequently carried reports of serious and even fatal illness resulting from the eating of duck eggs. Professor Dr. Beller of Ankara published in the *Reichsgesundheitsblatt* the results of an investigation of these cases undertaken by the ministry of health. The cases studied all presented dysenteric symptoms such as are caused by the *Bacillus enteritidis* of Gartner or *Bacterium breslaviense*. This seemed at first readily explicable as due to the penetration of excrement through the egg shells, the habits of ducks being little more cleanly in this regard than those of chickens. However, although dysenteric diseases are frequently encountered in ducks and geese, it was found that in the cases investigated the causative agents could not have been communicated through the egg shells. An examination of 1500 eggs showed positive cultures to be present in seven yolks. Doubtless it was here a question of infection acting through the blood stream. Hen's eggs appear to be less dangerous for in chickens dysenteric disease may be caused by *Bacterium gallinarum* which is not pathogenic in man. Infection from the partaking of hen's eggs is due chiefly to the bacillus of chicken tuberculosis which is closely allied to the causative agent of tuberculosis in man. As it seldom leads to serious acute illness raw hen's eggs emptied out of the shell are relatively harmless. Duck eggs on the contrary, are as a rule only to be eaten after thorough cooking, never while in a raw or underdone condition as is the case, for example when they are served with mayonnaise dressing. It is interesting that peasant folk refrain from eating duck eggs, apparently having learned from general experience the occasionally dangerous character of the eggs. It would seem on the face of it entirely possible by improved hygienic care of chickens and ducks to eradicate such of their diseases as through their eggs constitute a menace to man.

Experiments with Poliomyelitis

The director of a provincial hospital, Dr Kibler of Hall in Wurttemberg, has made a report on the recent poliomyelitis epidemic in southern Germany. Eighty-six cases were admitted to the hospital within three months. Diarrhea was present in only twelve patients. In all, seventeen patients had paralysis. Nine of these complained of stiff neck, a symptom present in thirty-four of those admitted to the hospital. Excessive perspiration was observed in two cases. On the other hand, hypertension and a marked drowsiness as in epidemic encephalitis were frequently encountered. Of nerve reflexes, Babinski's and Oppenheim's were each twice positive. Paralysis appeared in feverish patients as well as in those free from fever. The lumbar puncture carried out in each case for diagnostic and therapeutic purposes showed sixty-five times a pressure exceeding 150, nineteen times above 300 and twice above 500. The number of cells permitted no conclusion as to the severity of the disease. With regard to protein content, Pandy's reaction was positive in thirty-eight cases. The blood picture had to be abandoned as a criterion, owing to the irregular influences of accompanying disorders. Two patients of the entire group died. Lumbar puncture for the purpose of relieving pressure was therapeutically successful.

The permeation of the entire population by the disease was greater in this epidemic than generally would be assumed. Incompletely developed cases somewhat resembling influenza frequently took an ambulant course with no paralysis remaining. A strict quarantine of entire communities appears to be the only way in which to obtain successful results in controlling this disease.

BUCHAREST

(From Our Regular Correspondent)

Jan 2, 1936

Ten Years' Study of Malaria Therapy

During the period 1925-1935, at the Bucharest Neurologic Clinic, 1,224 patients suffering from neurosyphilis were inoculated with malaria. In all cases subcutaneous injections were replaced by the intravenous method, because the period of incubation is shortened. The latent period averaged six days. Professor Paulian, chief of the clinic, endeavored to obtain at least eight attacks of fever but he thinks it best to have twelve attacks. After the cure by quinine, a chemotherapeutic treatment is commenced and administered for another month. Of 525 cases of dementia paralytica, 418, or 79.61 per cent, showed decided improvement. Among cases of syphilitic meningo-encephalitis, 202, or 90.99 per cent, showed improvement. Of 140 cases of locomotor ataxia, 123, or 87.85 per cent, showed great benefit. Of 101 cases of tabes, seventy-eight, or 77.26 per cent, showed improvement. The mortality among 1,070 patients amounted to sixty-four cases, or 5.98 per cent, a considerable decrease in comparison with the figure obtained at the initial stage of malaria therapy, when it amounted to from 17 to 20 per cent.

The malaria therapy had a favorable action first on the mentality. In the spinal fluid the leukocytosis decreased first and then the albumin and globulin content. Finally the blood report improved. No improvement in the serologic manifestations may be regarded as a bad sign and it renders necessary a repetition of the malaria therapy.

The Increase in the Price of Drugs

The law restricting imports has led to a scarcity of foreign made drugs. This is disastrous, as there are no high grade chemicals produced here. Some manufacturers tried off hand to establish factories but their products are inferior in quality. The restriction on imports gave rise to the development of a new industry that of drug smuggling but of course in this way only a small fraction of the demand can be supplied at

fancy prices. The lack of foreign drugs resulted in a rise in prices of the staple medicines. A kilogram of aminopyrine cost wholesale in 1934 13,000 lei, while in 1935 it cost 18,000 lei, at retail it rose from 15,000 to 21,000 lei. The price of foreign quinine in September 1934 was 5,000 lei and at present it is 7,000 lei. The price of arsphenamine preparations jumped up by 33 per cent. English, French and American drugs and proprietary medicines cannot be obtained at all, because, by the law restricting imports, goods can be imported only on a compensation basis, that is, for goods exported. Germany, which is an extensive buyer of Rumanian wheat, maize, cereals, apples and wine, exports the largest quantity of drugs to Rumania. In the first quarter of 1935 Germany exported into Rumania 73,900 Kg of drugs of a value of 41 million lei.

The worst of this situation is that also the home factories raised the prices of their pharmaceutical products. Following the intervention of the Rumanian Medical Association, the ministry of industry is going to take measures against the price policy of the home factories. The ministry has demanded enlightenment on the cost of raw materials, the cost of production, and the sale price. Then the ministry of public hygiene will fix the sale price of home made medicines.

Providing the Rural Districts with Physicians

M. Titu Gane, state secretary of the ministry of public health, seeing the immense difference between the public health in cities and in villages, took a strong stand to improve the situation in the villages. In several places first aid stations and examining centers have been established, where the rural population is accorded free medical consultation and laboratory tests. To this end the government has appropriated more than 14 million lei in the last two years. With this will follow an increase in the number of village doctors. The government will make an agreement with doctors who are willing to locate in villages whereby they will be paid a monthly salary of 2,500 lei (\$25), for which they are obligated to reside in the designated village and to hold consultations four hours daily. The government will create new districts, so that no physician shall have under his care more than five or six villages. The minister will see that every district is only as large as to allow the physician to visit the remotest village of his district within one day, by carriage. The roads are not fit for motor traffic.

For the campaign against tuberculosis, the national league has more than 86 million lei, from which sum 36 million has been collected from private contributions. This large sum will be devoted to the building of sanatoriums which are badly needed.

It is hoped that this action of the ministry of public health will decrease the congestion of physicians in cities and will provide at least 1,500 physicians with a living.

Centenary of the Birth of Professor Kalinderu

The centenary of the birth of Professor Kalinderu has been celebrated all over the country, medical societies, almost without exception, having arranged special meetings with memorial addresses. Professor Kalinderu was born in Bucharest in 1835. After completing grammar school in Rumania he went to Paris, where he attended the university and then worked at different clinics, especially at the Salpêtrière, where he was engaged at the laboratory of the French neurologist Jean Martin Charcot. Here he wrote a treatise on cranial cephalotripsy. In 1870 he returned to Rumania and was appointed professor at the University of Bucharest, where with Paul Petrucci he established the incidence of leprosy in Rumania and compiled statistics. He showed that the greatest number of cases of leprosy occurred in the Dobruja and the swampy parts of the Danube region. He established the familial character of this disease and tried to explore all the foci. He especially dealt with the nervous forms, which were so difficult to diagnose.

At the International Conference on Leprosy in Berlin, Kalinderu achieved great success with his new ideas on diagnosis and treatment. He read a paper on a type of leprosy identified by Prof. Georges Marinesco and described by Morvan. Kalinderu studied in association with Professor Marinesco the disturbances of sensation occurring in leprosy.

Kalinderu worked also in other fields. With Professor Babes, late director of the Bucharest antirabies institute, he investigated the pathogenesis of tuberculosis. He drew the attention of the medical world to the unpleasant consequences of the use of cosmetics containing lead. He was led to this discovery by observing that women in general but demimondaines in particular often complained of intestinal cramps and other symptoms characteristic of plumbism. He found that in many cases lead was introduced into the organism through the use of hair dyes.

During his career, Kalinderu wrote about fifty treatises, many of which were translated into foreign languages.

ITALY

(From Our Regular Correspondent)

Dec 31, 1935

The Congress of Orthopedics

At the fourteenth National Congress of Orthopedics recently held in Bologna, the first topic was obstetric trauma and obstetric paralysis of the shoulder. Prof. Giulio Faldini of the University of Parma reviewed the literature, reported some cases and concluded that obstetric trauma and obstetric paralysis of the shoulder occur about once in a thousand cases. Boys are more frequently affected than girls, the right side is more frequently involved than the left one, and bilateral involvement is rare. The most frequent cause of obstetric paralysis is obstetric trauma. Maneuvers on the arm to obtain disengagement of the shoulders are frequently the cause of injuries in the shoulder. Obstetric paralysis is due to interruption of the nerve plexus roots or to truncal lesions. Obstetric trauma of the shoulder is more frequent than obstetric paralysis and can be classified into distortions and fractures of either the clavicle or the scapulohumeral joint. The injury most frequently seen is epiphysiochondral detachment. In new-born infants the roentgen examination may show a fracture of the clavicle. At the age of 5 months the diagnosis can be made and can be confirmed at the age of 1 year when the paralytic syndrome is definitely established. The performance of operations on the plexus is not advisable during the early life of the patient. It is better to resort to early electrotherapeutic and postural treatment and later to perform an operation. The prognosis is favorable.

The second official topic was internal lesions of the knee. Professor Deitala of Venice in collaboration with Dr. Tommasini, presented an illustrated paper of more than 100 pages. Diseases of the menisci are the most important of all internal lesions of the knee. In cases of suspected meniscal rupture it is advisable to wait for the results of conservative treatment, because if partial ruptures take place transversely they may heal spontaneously. In complete meniscal rupture an early operation is advisable to avoid the development of secondary arthritis. A menectomy and not a suture is the operation indicated. Satisfactory results are obtained in 80 or 90 per cent of the cases. The next congress of orthopedics will take place in Rome and the official topic will be the treatment of open fractures.

Commemorations of Italian Anatomists

Prof. Luigi Castaldi of the University of Cagliari recently organized ceremonies in memory of Filippo Civinini. Filippo Pacini and Atto Tigris which took place in Pistoia, the home town of these anatomists. Civinini, who was a teacher of

pathology and surgical principles in the University of Pisa, left to posterity work on the bones, the structure of the placenta, and the spine, ligament and toramen that are named after him. He wrote a summary on embryology. Pacini is the discoverer of Pacini's corpuscles. Pacini's discovery of the reception of sensations by these ganglions opened the way to the development of esthesiology. Tigris established the behavior of the splenic veins and the existence of splenic endothelial cells and of splenic reticular connective tissue. The anatomic preparations on the reticulo endothelial system made today are no different from those prepared with reticular tissues of the spleen by Tigris in 1849. He also made contributions on tubercle bacilli and the comma bacillus which he isolated from the blood of patients with Asiatic cholera.

A Center for Hydrologic Research

A center of scientific research has been established at Salsomaggiore, near Parma, for studies on thermal springs. The new center is connected with the medical clinics of Milan and Genoa and with the obstetric clinic of Milan, and its purpose is to study the action of the waters of Salsomaggiore in diseases of internal medicine and in gynecologic disorders, their influence on various internal organs, and particularly on the glands of internal secretion. The research institute thus founded will constitute the nucleus of a more complete organization for the hydrologic training of physicians, which is being at present promoted by high Italian scientific authorities, headed by Professor Rondoni, "academician of Italy."

Results of the Government Examinations in Medicine

During the year 1934, 1,677 graduates in medicine took the government examinations for licensure in medicine and surgery. The examinations were successfully passed by 1,522 of that number, while 155 (about 9.35 per cent) failed. The University of Naples furnished the largest number of graduates (311). The largest number of graduates (231) were enrolled also at the University of Naples for their government examinations.

Studies on the Finger Prints

Prof. V. Tirelli of the University of Turin has reported to the Academy of Medicine his research on the hereditary transmissibility of the patterns of the finger prints. It seems that a marked uniformity of types may result from hereditary influences. Professor Tirelli's research leads him to believe that it is possible to apply Mendelian laws to the familial transmissibility of certain composite types of finger prints.

Marriages

MARTIN J. RYAN JR., Harrison, N. Y., to Miss Elizabeth McCawley of New York in Carbondale, Pa. Dec. 28, 1935.

EDGAR L. AABERG, Peoria Heights Ill. to Miss Jean Littlejohn of Springfield in December 1935.

HUBERT A. ROYSTER JR., Philadelphia, to Miss Elizabeth Rutan of Sewickley, Pa. January 17.

LLOYD B. SHEFFIELD, Dallas, Texas, to Miss Katie Pearl Reynolds of Waco Dec. 28, 1935.

FREDERICK H. HOWARD, New York, to Miss Lulu O. Smith of Racine, Wis. Dec. 28, 1935.

ORVAL F. SWINDELL, to Miss Dagmar T. Knudsen both of Boise, Idaho Nov. 23, 1935.

LLOYD A. STAHL, to Miss Dorothy E. Stoneback both of Allentown, Pa. January 1.

ROBERTO GUTIERREZ, to Miss Virginia Clark Wathen both of New York February 1.

LANCE QUITMAN RAWLS, Red Level, Ala., to Miss BESSIE F. COSTEN Dec. 29, 1935.

Deaths

John Joseph Thomson * Mount Vernon N Y Trinity Medical College, Toronto Ont Canada, 1902 member of the American Academy of Ophthalmology and Oto Laryngology, American Laryngological, Rhinological and Otological Society and the American Otological Society, fellow of the American College of Surgeons, aged 56 chief of the ear nose and throat department of the Lawrence Hospital, Bronxville chief of the ear nose and throat department, and president of the medical board, 1915-1924, the Mount Vernon Hospital where he died, Nov 13, 1935, of hepatic cirrhosis and chronic myocarditis

William Stowe Rutledge * Ruston, La University of Alabama School of Medicine, University, 1909 also a pharmacist, past president secretary and treasurer of the Jackson-Lincoln Bi-Parish Medical Society coroner of Lincoln Parish served during the World War, aged 54, on the staff of the Ruston-Lincoln Sanitarium where he died, Dec 30 1935 as the result of injuries received when his car overturned near Brandon, Miss

Timothy Joseph Murphy * Boston, Harvard University Medical School, Boston, 1892, past president and censor of the Norfolk District Medical Society, clinical professor of medicine Tufts College Medical School, chief of staff of the Sanatorium Division of the Boston City Hospital and on the staff of St Margaret's Hospital, aged 69, died, January 1, of lobar pneumonia

Alvan Williams Atkinson * Trenton, N J Hahnemann Medical College and Hospital, Philadelphia 1893 past president of the Mercer County Medical Society, fellow of the American College of Surgeons chief, department of gynecology and obstetrics, William McKinley Memorial Hospital aged 66 died, Dec 25 1935 of cerebral thrombosis and arteriosclerosis

George W Belshe * Trenton, Mo University Medical College of Kansas City, Mo, 1904 member of the Missouri State Medical Association past president of the Grundy Daviess Counties Medical Society served during the World War on the staff of the Cullers Hospital aged 54 was burned to death Dec 17, 1935, in an automobile accident

Edward James McDonough, Portland Maine Medical School of Maine Portland 1892 member of the Maine Medical Association formerly professor of obstetrics at his alma mater at various times on the staffs of the Maine General Hospital Queen's Hospital and the Maine Eye and Ear Infirmary aged 68 died, Dec 30 1935 of heart disease

Jacob Harrison Shuford, Hickory N C, University of Michigan Department of Medicine and Surgery Ann Arbor 1901, past president of the Catawba County Medical Society fellow of the American College of Surgeons served during the World War, on the staff of the Richard Baker Hospital, aged 56 died, January 15 of heart disease

Virgil David Guttard * Toledo, Ohio, Ohio Medical University, Columbus, 1907, veteran of the Spanish-American and World wars, health commissioner of Mason County, Ky for four years formerly physician to the U S Indian Service, aged 57 died, Dec 25 1935, at his home in Bowling Green of cerebral hemorrhage

Homer Clifton Oatman * San Diego, Calif, Hahnemann Medical College and Hospital, Chicago, 1895 fellow of the American College of Surgeons, aged 65, surgeon to the Scripps Memorial Hospital, La Jolla, San Diego General Hospital and the Mercy Hospital, where he died, Dec 28 1935

James Nelson Douglas, Manasquan, N J, Hahnemann Medical College and Hospital of Philadelphia, 1905 served during the World War, on the staff of the Point Pleasant (N J) Hospital, aged 60 died Dec 23 1935, of coronary occlusion and chronic valvular heart disease

Elmore E Curtis * Saginaw, Mich Bennett College of Eclectic Medicine and Surgery Chicago, 1885 for many years a member and past president of the board of education on the staff of the Saginaw General Hospital aged 74, died, Dec 22 1935 of lobar pneumonia and myocarditis

Constantine Clinton Barnett, Huntington W Va Howard University College of Medicine Washington D C 1899 member of the American Psychiatric Association formerly medical superintendent of the State Hospital, Lakin aged 66 died Dec 29 1935 of hypertensive heart disease

William Edgar Rice, Raton N M Miami Medical College Cincinnati 1891 member of the New Mexico Medical Society formerly coroner of Douglas County Ill aged 70 on the staff of the New Mexico Miners Hospital where he died January 7 of lobar pneumonia

John Joseph Gailey, Waterbury, Conn Medical School of Maine Portland, 1898 fellow of the American College of Surgeons formerly member of the city board of health obstetrician to the Waterbury Hospital, aged 72, died Dec 30 1935, of cardiovascular renal disease

Floyd Snelson Kidd, Fort Snelling, Minn State University of Iowa College of Medicine, Iowa City 1907 member of the medical staff of the Veterans Administration Facility served during World War, aged 52, died suddenly, Dec 30 1935 of coronary disease

John Francis Donohue * Oyster Bay, N Y University of Buffalo School of Medicine, 1914, on the staff of the North Country Community Hospital Glen Cove, aged 46, died suddenly January 11, in a sanatorium at Goshen of acute myocarditis

Winthrop Dodd Mitchell, Worcester Mass Bellevue Hospital Medical College, New York 1887, fellow of the American College of Surgeons, surgeon and medical director emeritus St Michael's Hospital, Newark, N J, aged 73 died, Dec 30 1935

Albert A Ghriskey, Philadelphia, University of Pennsylvania Department of Medicine Philadelphia, 1880, on the staffs of the Pennsylvania and Episcopal hospitals, aged 76 died Dec 28 1935, of arteriosclerosis and coronary thrombosis

William Carson Officer, Monterey, Tenn University of Tennessee Medical Department, Nashville 1902 member of the Tennessee State Medical Association, owner of a sanatorium bearing his name, aged 55, died suddenly, Dec 24, 1935

Edwin Wilson Ludlow, Urbana Ohio, Medical College of Ohio Cincinnati, 1883 member of the Ohio State Medical Association past president of the Champaign County Medical Society aged 74 died, Dec 29, 1935, of diabetes mellitus

John Francis Gorman, Philadelphia Jefferson Medical College of Philadelphia 1906, member of the Medical Society of the State of Pennsylvania served during the World War, aged 55 died Dec 26, 1935 of cerebral thrombosis

Egbert Laird Mortimer, Baltimore, Maryland Medical College Baltimore, 1903, member of the Medical and Surgical Faculty of Maryland, aged 63, died, January 5, in St Agnes Hospital of carcinoma of the colon

Edgar Albert Lewis, Rockport Mo University Medical College of Kansas City Mo 1905 member of the Missouri State Medical Association, aged 58, died Nov 7, 1935 in the Missouri Methodist Hospital St Joseph

John Francis Ury, Columbus, Ohio, Ohio State University College of Medicine Columbus 1935 aged 26, intern at St Francis Hospital where he died Dec 24 1935, of acute membranous enterocolitis and paralytic ileus

John Ewing Brown, Los Angeles, Jefferson Medical College of Philadelphia, 1883, formerly professor of gynecology Omaha Medical College, for many years health officer of San Pedro, aged 77, died, Dec 23, 1935

George Gansey O'Connell, Chicago, Rush Medical College Chicago 1908 member of the Illinois State Medical Society, aged 50 died, Nov 23 1935 of hemiplegia hypertension arteriosclerosis and mitral stenosis

Henry Sinclair Hutchinson, Binghamton, N Y, College of Physicians and Surgeons, Medical Department of Columbia College, New York 1893 aged 67, died Dec 25 1935 in a hospital at St Petersburg Fla

Evan C Mills, San Francisco Hahnemann Medical College of the Pacific San Francisco, 1918, aged 56, died, Dec 4 1935 of chronic nephritis cardiac hypertrophy, pulmonary tuberculosis and chronic cholecystitis

George Pratt Garland, Eunice La, Tulane University of Louisiana Medical Department, New Orleans, 1907, part owner of the Eunice Clinic and Hospital aged 53, died in December 1935 of pneumonia

Charles Warren Du Bois, Los Angeles, Cornell University Medical College New York 1927, member of the California Medical Association aged 33 was accidentally shot and killed Dec 17, 1935

Eugene Barnard Haden, Panora Iowa, University of Nebraska College of Medicine Omaha 1895 member of the Iowa State Medical Society aged 69, died Dec 24 1935 of heart disease

Don Dickinson Brooks, Connellsville Pa Maryland Medical College Baltimore 1910 served during the World War school physician aged 48, died, Dec 25, 1935, of pulmonary tuberculosis

Alice Virginia Duffield, San Diego, Calif., Hahnemann Medical College and Hospital, Chicago, 1899, aged 80, died Dec 23, 1935, in National City, of hypertension and cerebral hemorrhage.

Daniel Hiestand, Allentown, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1881, aged 79, died Dec 30, 1935, of injuries received in a fall ten days previously.

Robert L. Kern, Richmond, Va., University College of Medicine, Richmond, 1899, member of the Medical Society of Virginia, aged 64, died, Dec 24, 1935, of nephritis and myocarditis.

William Henry Leslie, St. Petersburg, Fla., Rush Medical College, Chicago, 1893, formerly a medical missionary, aged 67, died Dec 25, 1935, in a local hospital, of coronary occlusion.

George Robert Love, Preston, Minn., Minneapolis College of Physicians and Surgeons, 1910, aged 51, died, Dec 18, 1935, of hypertension, nephritis, cerebral hemorrhage and pneumonia.

Erwin L. Godfrey, Colon Mich., Hahnemann Medical College and Hospital, Chicago, 1876, Chicago Homeopathic Medical College, 1879, aged 83, died Dec 14, 1935, of angina pectoris.

Lawson A. McCurdy, Indianapolis, Central College of Physicians and Surgeons, Indianapolis, 1891, aged 74, died January 2, of bronchopneumonia and chronic myocarditis.

David Patterson Fredericks, Patton, Calif., Jefferson Medical College, Philadelphia, 1894, aged 63, died Nov 29, 1935, of a ruptured duodenal ulcer, and arteriosclerosis.

Israel Fletcher Longley, St. John, N. B. Canada, Queen's University Faculty of Medicine, Kingston, Ont., 1910, served during the World War, aged 50, died, Nov 21, 1935.

John H. Powell, Atlanta, Ga., Georgia College of Eclectic Medicine and Surgery, Atlanta, 1893, member of the Medical Association of Georgia, aged 66, died Nov 16, 1935.

William Alexander Shearer, Rock Tavern, N. Y., Rush Medical College, Chicago, 1904, since 1928 health officer of the town of Hamptonburg, aged 58, died Dec 13, 1935.

Thomas Harris Boyle Runnalls, Carbonado, Wash., University of Oregon Medical School, Portland, 1912, aged 47, died Nov 17, 1935, at Tacoma, of pneumonia.

Samuel Nelson Miller, Middleton, N. S. Canada, University of the City of New York Medical Department, 1875, aged 85, died Dec 16, 1935, of coronary thrombosis.

John Leonidas Hobbs, Los Angeles, Marion-Sims College of Medicine, St. Louis, 1899, aged 64, died Dec 15, 1935, of cerebral arteriosclerosis and hypertension.

Florence Josephine Murcutt, Inglewood, Calif., Woman's Medical College of Pennsylvania, Philadelphia, 1907, aged 71, died, Dec 13, 1935, of a skull fracture.

Charles Alfred Hull, Liberty, Ohio, Starling Medical College, Columbus, 1904, member of the Ohio State Medical Association, aged 59, died Dec 15, 1935.

C. W. Gleaves, Wytheville, Va., Medical College of Virginia, Richmond, 1879, also a bank president, aged 80, died Dec 12, 1935, of bronchopneumonia.

Adam M. Autrey, Houston, Texas, University of Tennessee Medical Department, Nashville, 1886, aged 72, died Dec 28, 1935, of hypostatic pneumonia.

Carl Hoffman, Seattle, John A. Creighton Medical College, Omaha, 1896, aged 63, died, Dec 1, 1935, of coronary thrombosis and chronic myocarditis.

Ellen Maria Kirk, Cincinnati, New York Medical College and Hospital for Women, 1877, aged 57, died Nov 29, 1935, of bronchitis in Belvidere, Ill.

Mary Elizabeth MacLeod, St. John, N. B. Canada, Northwestern University Woman's Medical School, Chicago, 1892, aged 83, died Dec 12, 1935.

Rutledge T. Wiltbank, Philadelphia, Hahnemann Medical College and Hospital, Philadelphia, 1891, aged 82, died Dec 27, 1935, of arteriosclerosis.

John Mitchiner Rumph, Titum, N. M., Southern Medical College, Atlanta, 1893, aged 85, died in December 1935, of acute yellow atrophy of the liver.

August Dutzi, St. Louis, St. Louis University School of Medicine, 1905, aged 66, died Dec 22, 1935, in the Jewish Hospital, of heart disease.

James Robert Cranford Sasser, Ga., Atlanta Medical College, 1895, member of the Medical Association of Georgia, aged 68, died Nov 29, 1935.

Stuart Calvin Runkle, Philadelphia, Jefferson Medical College of Philadelphia, 1888, aged 74, died, Dec 29, 1935, of carcinoma of the throat.

Vesselius Davis, Wapella, Ill., Western Reserve University Medical Department, Cleveland, 1882, aged 76, died Dec 20, 1935, of arteriosclerosis.

Nellie Virginia Mark, Baltimore, Boston University School of Medicine, 1884, aged 78, died, Dec 3, 1935, in Los Angeles, of acute gastro-enteritis.

David John Evans, Los Angeles, Western Pennsylvania Medical College, Pittsburgh, 1903, aged 62, died, Dec 22, 1935, of cerebral hemorrhage.

Rupert William Gliddon, St. Thomas, Ont., Canada, University of Toronto Faculty of Medicine, Toronto, 1913, aged 49, died Dec 7, 1935.

Joseph Theodore Wright, Winnipeg, Manit., Canada, Trinity Medical College, Toronto, 1901, aged 60, died, January 6, of coronary occlusion.

Edward M. Bell, Mill Spring, N. C., University of Nashville (Tenn.) Medical Department, 1896, aged 63, died, January 17, of angina pectoris.

Charles Carlyle Tatham, Edmonton, Alta., Canada, University of Toronto (Ont.) Faculty of Medicine, 1900, aged 58, died Dec 25, 1935.

August Adolph Drossel, San Francisco, Cooper Medical College, San Francisco, 1889, aged 67, died Dec 13, 1935, of cerebral sclerosis.

Elmer E. Goucher, McMinnville, Ore., Willamette University Medical Department, 1882, aged 77, died, Dec 28, 1935, of heart disease.

Anthony W. Graham, Millersburg, Ohio, University of Missouri School of Medicine, Columbia, 1876, aged 84, died, Nov 26, 1935.

Ernest Augustus McDonald, Toronto, Ont., Canada, University of Toronto Faculty of Medicine, 1905, aged 57, died Dec 12, 1935.

Maurice Ernest Thomas, Toronto, Ont., Canada, University of Toronto Faculty of Medicine, 1922, aged 38, died, Dec 10, 1935.

Abraham Weatherly Boyd, Chattanooga, Tenn., University of Georgia Medical Department, Augusta, 1885, aged 75, died Dec 13, 1935.

John Milton Shriver, Waynesburg, Pa., Jefferson Medical College of Philadelphia, 1880, aged 81, died, Dec 17, 1935, of heart disease.

Alberto Horatio Stockbridge, Lynn, Mass., Tufts College Medical School, Boston, 1905, aged 62, died, Dec 24, 1935, of heart disease.

Joseph Aloysius Kearns, Phelpsston, Ont., Canada, University of Toronto Faculty of Medicine, 1910, aged 50, died Dec 3, 1935.

James E. McHugh, Fort Wayne, Ind., Fort Wayne College of Medicine, 1893, aged 68, died Dec 2, 1935, in the Lutheran Hospital.

Charles Robert Cuthbertson, Toronto, Ont., Canada, Victoria University Medical Department, Coburg, 1886, died Dec 19, 1935.

Abel T. Bruere, Creamridge, N. J., Jefferson Medical College of Philadelphia, 1886, aged 79, died Dec 24, 1935, of nephritis.

Julius Gerhart Stammel, Fort Lauderdale, Fla., Medical College of Ohio, Cincinnati, 1907, aged 51, died in November 1935.

Frederick M. Sutton, Upper Lake, Calif., Atlanta College of Physicians and Surgeons, 1901, aged 57, died Dec 14, 1935.

Israel Melbourne Lovitt, Yarmouth, N. S. Canada, Harvard University Medical School, Boston, 1885, died Dec 7, 1935.

William Russell Dove, Harrison, Va., Medical College of Virginia, Richmond, 1907, aged 61, died Nov 21, 1935.

Edson W. Masten, Cato, N. Y., Albany Medical College, 1879, aged 78, died Dec 31, 1935, of chronic myocarditis.

Peter B. Robertson, Windsor, Ont., Canada, Trinity Medical College, Toronto, 1891, aged 71, died Dec 25, 1935.

Stephen Madatyan Long, Fresno, Calif., Albany (N. Y.) Medical College, 1894, aged 68, died, Nov 12, 1935.

Louis Hannah, Sylva, Ga., Atlanta College of Physicians and Surgeons, 1911, aged 48, died Nov 22, 1935.

William Franklin Skillern, Hixson, Tenn. (licensed in Tennessee in 1889), aged 77, died, Dec 12, 1935.

Bureau of Investigation

CURARINA

An Alcoholic Cure—All Declared a Fraud

"Curarina," or, to give it its full name, "Curarina de Juan Salas Nieto," is a good example of the way in which the public can be swindled by 'patent medicine' exploiters when newspapers and radio stations will sell them space and time for the purpose of making the contact between the swindler and the swindled. Curarina has been sold in the United States by one Richard Diener, who describes himself as the agent for the Curarina Agency at Oxnard Calif.

Part of the advertising of this nostrum was a sixteen-page leaflet in which the alleged marvelous therapeutic virtues of this 'patent medicine' were described and testimonials were reproduced. There was also published in the same booklet what purported to be the results of a chemical examination of the preparation. It was one of those analyses that are so popular with 'patent medicine' concerns which make a pretense of frankness. The analysis gave little information regarding what was in the product but did state what was *not* in it. The examination, according to the booklet, was made by 'Dr. Frederick V. Bruchhausen O. O., Professor of Pharmaceutical Chemistry, Member of the Medicinal Committee of the University of Wurzburg (Germany)' and was from the "Pharmaceutical Institute and Laboratory for Applied Chemistry of the University of Wurzburg." It was dated January 1932. The report stated that, when observed under a quartz lamp, Curarina had "a whitish greenish-yellowish fluorescence." Further, it had a specific gravity of 0.9568, an alcohol content of 32.3 Gm in 100 cc extractives, 1.5 Gm in 100 cc ash content 0.348 Gm in 100 cc. The examination of the liquid part of Curarina to determine the "nature of the denaturant" proved negative for methyl alcohol, acetone, pyridine, bases, phthalic acid and volatile poisons. The tests for heavy metals, saponin and alkaloids were all negative. In other words, the analysis showed positively merely that it had over 30 per cent of alcohol and a small amount of extractives, and a small ash content.

The important information, of course, was that the stuff contained over 30 per cent of alcohol. This information took on added interest when one read the booklet and found that Curarina was described as an excellent tonic against general debility and would stimulate the appetite 'if taken either pure or mixed with some liquor.' The idea of mixing a 'patent medicine' containing over 30 per cent of alcohol with liquor might lead one to infer that the stimulation would not be confined to the appetite.

The booklet stated that Curarina was originally invented as a "sure remedy for snake and insect bites." However, according to Mr. Diener, the California agent, "Curarina is the only remedy known today which will quickly bring a person back to normal health who is afflicted with angina pectoris and other heart troubles as well as diabetes." Mr. Diener further states that "no one ever needs to lose his arms, legs or his life from blood poisoning for by just applying Curarina full strength, and taking the medicine internally, one would recover." Further, "no person will have apoplectic strokes after using at least six bottles of Curarina."

Curarina was especially valuable according to Mr. Diener, for colds, grippe, lung and other bodily disorders, tonsillitis, tetanus and high blood pressure. It was a preventive of "malaria, yellow fever, black vomit." One teaspoonful of Curarina taken every hour would cure appendicitis and one tablespoonful every two hours was recommended for smallpox. Curarina was not recommended as a cure for cancer, but Mr. Diener said that when used in cases of cancer it reduces the pain and stops progress of such disease. Incidentally, Curarina was a wonderful preparation for 'distemper in dogs.'

One of Mr. Diener's important testimonials purported to come from 'Dr. G. F. Mendez, present Minister of Public Works of the Republic of Venezuela.' Then there were testimonials from less important people such as Mr. R. O. Thomas of Carpinteria, Calif., who heartily recommended Curarina to anyone having angina pectoris or hardening of the arteries. Mrs. Webb Wilcox of Wheeler's Hot Springs, Calif., claims to have been entirely cured of heart trouble, diabetes and kidney

trouble by the use of Curarina. Mr. E. A. Swank of Hardin Mont., reports that one of the cowboys in his locality who had "yellow jaundice" took three bottles of Curarina and was cured. Mr. H. E. Ward of Webster Groves, Mo., had a little dog with eczema which the veterinarians had been unable to cure, but it was cleared up with Curarina.

Now comes that efficient but overworked arm of the government, the Office of the Solicitor of the Post Office Department. Hon. Karl A. Crowley, Solicitor in a memorandum addressed to the Postmaster General, recommended that the Curarina Agency and Richard Diener have the United States mails closed to them because they were engaged in conducting a scheme for obtaining money through the mails by fraudulent pretenses and promises. The Curarina Agency and Mr. Diener were notified Oct. 1, 1935, that they would be called on to show cause by November 6 why a fraud order should not be issued against them. No appearance was entered by any one in behalf of either the agency or Mr. Diener, but a written answer to the charges was submitted through Mr. Charles F. Blackstock, an attorney of Oxnard, Calif.

Mr. Crowley points out in his memorandum that Richard Diener has been engaged in the sale through the mails of a preparation called "Curarina de Juan Salas Nieto" as a cure for practically every disease known to man, to say nothing of diseases of animals. He states, further, that Mr. Diener has secured business through newspaper advertisements, radio broadcasts and by other means. He then goes into detail regarding the claims made by Diener in the material that he would send to those with whom he had got in contact by radio newspaper or other advertising.

The federal chemists analyzed Curarina and reported that it consisted of plant extractive matter in 32 per cent of alcohol, the analysis showed the presence of potassium phosphate, chloride, sulphate, carbonate and a small trace of all aloids, with tannin and saponin indicated. The plants from which the extractives were taken had no recognized value in modern medicine as a remedy for any disease whatever. The Solicitor learned from physicians and veterinarians who were competent to express an opinion that Curarina had no essential value either as a palliative or as a curative agent. Mr. Crowley pointed out that Mr. Diener, who was promoting the stuff, is not a physician and has no medical training. In fact, Diener is said to have admitted to the Post Office inspector who investigated the matter that he does not even know the ingredients of the preparation and that he is wholly unqualified to pass on symptoms of diseases or to state how the alleged therapeutic effects would be accomplished.

In view of all the evidence, Solicitor Crowley recommended that a fraud order be issued. Postmaster General Farley on Nov. 11, 1935, closed the mails to the Curarina Agency and Richard Diener.

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE: The abstracts that follow are given in the briefest possible form: (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum, (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

Albert's Food—Albert Food Laboratories, Hollywood, Calif. Composition: Essentially wheat flour, shorts and bran. Body builder, etc. Fraudulent therapeutic claims.—[N. J. 23020, April 1935.]

Ammon's Antiseptic Wash—Home Remedy Co., Pittsburgh, Pa. Composition: Essentially plant drug extracts and water, accompanied by a box of suppositories consisting essentially of boric acid, ammonium alum, fats and waxes. Not antiseptic when used as directed. Fraudulent therapeutic claims.—[N. J. 23255, May 1935.]

Pheno Isolin—Scientific Mfg. Co., Scranton, Pa. Composition: Essentially turpentine, camphor, menthol and resin dissolved in an oil. For boils, carbuncles, ulcerated cancer, neuritis, coughs, etc. Not a ready germicide or an antitoxin as represented. Fraudulent therapeutic claims.—[N. J. 25230, May 1935.]

Correspondence

OXYGEN TREATMENT

To the Editor—The dramatic recurrence of a situation that has become a dangerous one occurred recently and prompts me to write this letter

A child, aged 9 years suffering from bronchopneumonia, was in an oxygen tent at a well known hospital in New York. I was asked to see the child in consultation although the doctor told me when I arrived that it seemed to be of no use. The child was as blue as a blue serge coat, the pulse was 160, the temperature 108. Although the child had been in a tent, the nurse said that he had been blue all day. The oxygen concentration in the tent was 28 per cent. Although it seemed quite hopeless, I increased the oxygen flow by adding an extra tank and ran in 32 liters of oxygen per minute until the concentration rose to 60 per cent. The child's color immediately began to improve and the pulse began to fall. The improvement continued until the pulse came down to 120, the temperature gradually falling to 101, and the child, whose eyes had previously rolled upward, became conscious. The breathing, which had appeared terminal and very shallow, took on a deeper and more vigorous character.

The point which this illustrates is that a number of oxygen tent manufacturers have sold tents saying that it is unnecessary to test the oxygen concentration if a certain flow, between 7 and 12 liters per minute, is run in. In many instances the tent leaks to such a degree that the recommended flow will give a concentration of less than 30 per cent. In three other instances in hospitals in New York I have found that between 30 and 40 liters per minute was necessary in order to keep the oxygen concentration between 50 and 60 per cent. In two instances the cover of the icebox made so little contact, owing to worn out rubber gaskets, that the oxygen escaped in this way. In a third instance the water bottle top at its connection with the glass leaked to such an extent that very little oxygen was actually entering the tent.

In one hospital in which I was for a time the medical consultant, disappointment with oxygen therapy could be traced to a practice of giving 7 liters a minute of oxygen in a tent that leaked like a sieve. In these various instances which I quote there was no testing of the oxygen concentration within the tent. This procedure, which takes a minute and a half to do can of course be learned in a half hour by almost any attentive individual, and it seems almost criminal to me to witness hundreds of times an oxygen tent being prescribed without any prescription of dosage. In the various articles which I have written on this subject I have attempted to emphasize that the dose of oxygen be prescribed and not simply an oxygen tent, and that the oxygen concentration be tested either by a technician, a nurse or the doctor himself at least three times during the day. In many instances, for example, of congestive heart failure, a diuresis does not set in unless the oxygen concentration is raised to 50 or 60 per cent.

I think the importance of prescribing the dose of oxygen should be emphasized in medical school teaching. Benish of the Linde Air Products Company, informs me that in hundreds of instances of tent usage throughout the country it is uncommon to have the oxygen concentration within the tent actually tested. This matter impresses me as a very serious one. The nasal catheter with the method which I suggested of putting the catheter in the nasopharynx and running in from 4 to 5 liters of oxygen a minute will give a concentration of 38 per cent, which is higher than that frequently obtained in a poorly run oxygen tent. Employing the modification of that method by which the catheter is put in the oral pharynx Wineland and Waters have obtained concentrations of 50 per cent in the inspired air.

The oxygen tent in which the air is cooled and dried may become a therapeutic procedure of crucial value provided the oxygen concentration is elevated above 50 per cent and in some cases for periods of ten to twelve hours to as high as 90 per cent.

Sayers in unpublished work, shows that animals can live in pure oxygen sixteen hours a day without harmful effects. I have confirmed Sayers' work but have also shown that if animals are kept in 50 per cent oxygen instead of air the remainder of the time pulmonary edema develops. However it appears safe from animal experiments to administer from 90 to 100 per cent oxygen for ten to twelve hours a day and 50 per cent oxygen the rest of the time. This work I have mentioned in an article on the therapeutic use of helium in the December *Annals of Internal Medicine*. I mention it because there was in that article an example of an infant that had sudden bilateral pneumothorax in which the dyspnea was relieved only when the oxygen concentration in the tent was raised to 90 per cent.

It seems to me therefore, that emphasis on the importance of prescribing the dose of oxygen namely the oxygen concentration desired, could profitably appear. Necessarily, no tent should be used unless the oxygen concentration is tested as a routine. At the present time it is safe to say that over 90 per cent of the oxygen tents in use in the United States are not tested for the oxygen concentration within the tent.

In the use of helium it is obvious, as I have mentioned in the article referred to, that the dosage of helium employed is of even greater importance, and I think it would be unfortunate to have helium used by any one who is not equipped to determine the amount of oxygen in a helium oxygen atmosphere.

ALVAN L. BARACH, M.D., New York

FIRST SURGICAL OPERATION ON THE HEART

To the Editor—In the Correspondence column of *THE JOURNAL* Sept 7, 1935, is a communication from Dr. Charles H. Garvin of Cleveland calling attention to the fact that on July 9 1893, Dr. Daniel Hale Williams, Negro surgeon of the Provident Hospital in Chicago, performed a successful surgical exploration of the heart for a stab wound. Dr. Williams later recorded his case in the *New York Medical Record* (51:437 [March 27] 1897) under the title "Stab Wound of Heart and Pericardium." Dr. Garvin was stimulated to write this article after reading a report by Drs. George Benet and Charles Spivey in the June 1 issue of *THE JOURNAL* because these physicians stated that "the first recorded attempt to suture a stab wound of the heart was made by Cappelen in 1895."

Dr. Garvin has further stated in the leading editorial of the November 1935 issue of the *Journal of the National Medical Association* that Dr. Williams "takes priority in successful operation for stab wound of human heart."

Since Dr. Benet's statement rested on information derived from me I feel it proper to call attention here to the fact that Dr. Daniel Williams in his own report of his case stated that "there was no hemorrhage from the heart or pericardium." Dr. Williams then proceeded to close the wound in the pericardium having found no wound in the heart. The hemorrhage apparently came from division of the internal mammary vessel. In view of this and in view of a study of Cappelen's original report (*Norsk mag f Læge idensk* 11:285 1896) it seems only fair to give to Cappelen priority in making a deliberate attempt to suture a wound of the heart.

I cannot give accurate data concerning first attempts to suture wounds of the pericardium, in which category Dr. Williams' case belongs but it is known that Romero of Barcelona as early as 1819 practiced pericardiostomy for pericarditis (see

Baizeau Memoire sur la ponction du pericarde au point de vue chirurgical, *Gaz de med et de chu*, Paris, 1868, p 565) It is indeed possible and from my historical researches probable that the case reported by Dr Williams was the first case in which the pericardium was sutured for a wound

ELLIOTT C CUTLER, M.D., Boston

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but the name will be omitted on request.

CONSTIPATION IN CHILDREN

To the Editor—I have under my care a five year old youngster who has had clay colored stools for the last three years. The stools are of the constipated type—small marble like lumps. The bowels are moved once daily. Treatment has been of no avail. Please advise as to cause and treatment. Physical examination otherwise is negative.

M.D. New York

ANSWER—Constipation in a 5 year old child, accompanied by no impairment in health has been termed simple constipation. The most common cause is faulty early training. If the habit of regular defecation is not early established the infant or child will develop this symptom. Other causes that may be mentioned are errors in diet, especially excessive fat causing soapy stools, deficiency of tone in the abdominal or intestinal muscles, a deficient secretion of intestinal juices, and lack of water. In certain individuals of a nervous type or temperamental character the habit of constipation is more frequent. Organic causes such as stenosis of the anus or rectum, spasm of the sphincter muscle, fissure of the anus, or rectal polyp must be considered. Spastic constipation is rare in childhood.

The treatment consists in establishing regularity in habits of defecation. In the older child it may be advisable to diminish the quantity of milk and increase the supply of pulpy fruits and vegetables in the diet. Coarse cereals containing bran may be added, and the malt sugars may be substituted for sucrose. Honey and molasses are often used with good effect. A dose of liquid petrolatum at night in obstinate cases is often indicated, and a preparation of liquid petrolatum with agar is sometimes more effective than the oil alone and has the added advantage that it is not usually passed unconsciously as is the oil, thus avoiding staining of underclothing. Plenty of water between meals is recommended. The most important factor is training the child into a regular habit. A definite time should be fixed, most preferably immediately after breakfast. By proper instruction, the child must be taught to acquire the habit of going to stool and of starting his own evacuation by correct muscular coordination. Any organic defect that might be a cause of the constipation should be suitably remedied.

SKIN REACTION WITH ARSENICALS

To the Editor—Will you kindly tell me which are the characteristics of the skin reactions due to trivalent and to pentavalent arsenicals and possibly the literature on the subject?

M.D. Rhode Island

ANSWER—Inorganic arsenic, whether trivalent or pentavalent produces in most cases as evidence of acute poisoning an erythema sometimes described as erysipeloid or scarlatiniform. Urticaria and papular eruptions also are described. Less often it causes vesicular, bullous or even ulcerative eruptions. Herpes zoster is occasionally reported as a sequel of acute poisoning with arsenic.

Chronic poisoning with inorganic arsenic is much commoner, taking the form of pigmentation of the skin of a dirty gray or yellowish brown color, distinguished from the pigmentation of Addison's disease by not affecting the mucous membranes. The face, neck, axillae and abdomen are involved first. By far the commonest evidence of chronic poisoning by arsenic is the keratosis papular and localized on the palms and soles. It begins about the sweat ducts but later may cause diffuse thickening of the whole area. This keratosis is an important lesion, for it not seldom ends as a malignant, prickle cell epithelioma.

Similarly there is no strict division as concerns skin eruptions between the trivalent and pentavalent organic arsenicals. While the trivalent arsphenamine group is better known as a producer of various skin eruptions, this unenviable reputation is likely to be soon cast in the shade if the use of the penta-

valent acetarsone continues to increase, for it causes similar eruptions in from 25 to 7 per cent of the cases in which it is employed, far exceeding the frequency of dermatitis caused by arsphenamine.

J. E. Moore (The Modern Treatment of Syphilis, Springfield Ill., and Baltimore, C. C. Thomas, 1933, p 79) divides these eruptions into sensitizing and nonsensitizing. Urticaria occurs commonly as part of the nitritoid reaction, but a scarlatiniform erythema may take its place. These subside as the reaction passes, whether consequent to the intramuscular injection of epinephrine or without it.

Along with the febrile reaction occurring so frequently after the first or second injection of one of these drugs, an erythematous or urticarial eruption may appear. This subsides with the fever and ordinarily does not recur after subsequent injections. There is not much itching with these eruptions. In place of them, herpes zoster or herpes simplex may occur.

H. S. Keim (Erythema of the Ninth Day, *Arch. Dermat. & Syph.* 31:291 [March] 1935) has recently revived interest in Milian's conception of an erythema occurring on the ninth or tenth day after the first injection of any of the arsphenamines. In his series of ten such cases, one had to be excepted because of a mild leukopenia and later a slight icterus with pruritus and increase of bilirubin in the blood stream. With this exception, the eruptions were scarlatiniform or morbilliform but lacked symptoms allowing their classification as real measles or scarlatina as Milian thought them. Considerable fever, up to 105 F. in one case, accompanied the eruption, and pharyngitis, stomatitis, vomiting and photophobia occurred in different cases. The reaction is due to some part of the drug, though Keim thinks possibly not to its arsenic.

It is a self-limiting reaction in spite of continued administration of the medicine clearing in three or four days. Itching is slight. The eruption appears usually on the trunk and extremities first. The superficial lymph glands are usually enlarged. It occurs mostly after mild dosage and in younger patients. Women are more liable than men to develop it.

The fixed eruption is due to a localized sensitization to one of the arsphenamines. It appears as a single plaque or a few of them, oval or round, pink, yellowish or brownish red. As it subsides in a few days to a week, pigmentation is often left. Following the next injection the same area reddens and swells and several similar ones appear, passing through the same evolution. In severe cases these may be bullous. They seldom are of importance if the use of the drug is discontinued.

Of much greater importance are the eruptions occurring late in the course of injections and beginning usually on the limbs as a very itchy macular morbilliform, papular, often lichenoid, vesicular or squamous rash. They may appear at any time from two hours to three weeks after the last injection of the drug on the average on the fifth day. They become very scaly and spread to involve the whole body, then they are known as exfoliative dermatitis. Mild cases may never become generalized and may clear up in a few days. More often they last three weeks or longer and are accompanied by constitutional symptoms, fever, chilliness, prostration, albuminuria and icterus. The mucous membranes may be involved, and there may be stomatitis, vaginitis, exfoliative conjunctivitis, diarrhea with epithelial cells and mucus in the stools, and temporary deafness from plugs of scales in the ear canals. This is a real sensitization, usually a group sensitization, so that any drug of the group will react on the skin.

Following this there is a great liability to skin infection. Boils, carbuncles, due both to vulnerability of the skin and to lowered general resistance and sometimes agranulocytosis, acute bronchitis and polyneuritis may occur.

Purpura is seen less often during or after a course of the trivalent organic arsenicals but is a most important symptom. Its appearance should be immediately followed by a complete blood count. If the red or white blood cells decrease markedly in number or the percentage of polymorphonuclear neutrophils falls, the medication must be stopped at once. This condition, agranulocytosis is often accompanied by a stomatitis or angina in which the fusospirillosis organisms are frequently found. It differs from the stomatitis due to mercury in being more acute, more red, drier and more exfoliative rather than moist, fetid and spongy as is the mercurial form (Stokes, J. H. Modern Clinical Syphilology, ed 2, Philadelphia and London W. B. Saunders Company 1934, p 470).

Reactions to bismuth arsphenamine sulfonate are of the same nature as the foregoing, modified by the action of bismuth which is an adjuvant in the production of stomatitis and dermatitis.

Few skin reactions to mapharsen have been reported but pruritus and exfoliative dermatitis have occurred.

Acetarsone (known also as stovarsol or spirocide) is gaining in popularity because of the ease of its administration, but its toxicity seems much greater than that of the arsphenamines, perhaps because of unwise administration. It may be responsible for the severest skin reaction, exfoliative dermatitis or agranulocytosis, which is apt to be accompanied by purpura. As much care is needed in its use as in the administration of any other organic arsenic compound.

Jaundice during a course of any of these drugs should be an indication for ceasing medication. It is usually of the catarrhal type, with a slightly swollen liver, its tender edge from 2 to 6 cm below the edge of the ribs, bile pigment in the blood and the urine but absent from the stools, and a short febrile course. It occurs from a few days to several months after treatment. Acute yellow atrophy occurs most often in the pregnant.

Tryparsamide is the only one of the commonly used organic arsenicals that does not cause skin eruption. The following are recent articles:

Ayres Samuel Jr and Anderson N P. Cutaneous Manifestations of Arsenic Poisoning. *Arch Dermat & Syph* 30:33 (July) 1934.
Wile U J and Sams W M. Jaundice in Syphilis. Relation to Therapy. *Am J M Sc* 187:297 (March) 1934.

CARCINOMA OF VOCAL CORDS

To the Editor—A white man, aged 60, complains of hoarseness of nine months duration. Indirect laryngoscopy reveals paralysis of the left cord. Direct laryngoscopy shows fixation of the left cord and left side of the larynx with a turgescence and slight redness of the sinus of Morgagni. A piece of the cord removed for biopsy confirmed the diagnosis of carcinoma of the larynx. There are no externally palpable glands. The general physical condition of the patient is good. What is the treatment of this case—surgery, x-rays or radium? What are the statistics with each form of treatment?

M D New York

ANSWER—Carcinoma of the vocal cords may be classified from the standpoint of prognosis and operability somewhat as follows:

1 Those cases in which the cord is involved in its middle third and the cord remains freely movable.

2 Those cases in which the cord is usually fixed, the growth not extending much beyond the median line anteriorly and not encroaching on the posterior third of the cord to any extent.

3 Those cases in which the carcinoma involves the entire vocal cord from the arytenoid posteriorly to the median line or beyond anteriorly.

4 Cases belonging to groups 2 and 3 with the thyroid cartilage involved additionally or with encroachment on glands in the neck.

Group 1 is the earliest form and offers an excellent prognosis if treated by splitting the larynx (so-called thyrotomy or laryngofissure) and widely removing the affected cord. This is the treatment of choice in the opinion of the most competent laryngologists in this country, Chevalier Jackson and his school and Sir St Clair Thomson in England and others obtain as high as an 80 per cent or greater incidence of lasting cures in this type of case.

In group 2 good results may be obtained by means of this procedure, but the number of lasting cures will be less and the number of recurrences will be greater.

In group 3 thyrotomy is no longer suitable. Such patients should have a total laryngectomy. The operative mortality and morbidity is much higher than in the operation spoken of and the prognosis for lasting cure is much less.

In group 4 the outlook becomes even worse, no matter what the treatment.

As to radium and x-rays a few experts have reported that in group 1 they have obtained results almost as good as those to be had by operation. They say, furthermore, that the patient is spared an operative intervention and that in the event the disease process is not controlled operation may still be undertaken.

In group 2 it is a debatable question whether operation is better than radiation therapy. The majority of competent laryngologists in this country lean toward the idea of the operative type of intervention.

As concerns group 3 the tendency may be even more to lean toward the use of radium and the x-rays although the whole field is still controversial. A cure by the use of radiation methods spares the patient the risks and the permanent disabilities that follow total removal of the larynx.

If operation should be performed in cases falling in group 4 a wide dissection of the glands of the neck would be required in addition. As a matter of fact the tendency is not to rely in the more advanced cases solely on surgery or radiation-

therapy but on combinations of the two. The manner and form of these combinations depend on the individual operator and the means at his disposal.

As to statistics, in cases belonging to groups 2, 3 and 4 it is not possible to make accurate statements. They vary with the different operators, and in the field of radiation therapy the time is as yet not long enough to speak with final authority.

CLIMATE FOR BRONCHITIS AND BRONCHIECTASIS

To the Editor—I am 33 years of age and have been bothered with a maxillary sinus infection for three or four years. I have been in western Texas for two and one-half years and since coming out here I have developed a chronic bronchitis which has gradually become worse. Injection of iodized oil into my bronchial tubes recently showed considerable bronchiectasis. I had a submucous operation about a year ago and since that time haven't had any acute sinus attacks. A specialist reports my sinus in very good condition at the present time. The climate here is dry and the elevation is 2900 feet. I am a company doctor for an oil firm and there is considerable sour gas in the camp particularly on still nights. My cough and general condition have been I am sure greatly aggravated by this gas and by the dust we have in this part of the country. Other doctors have recommended but little in the way of treatment except a change of climate and use of autogenous vaccine. I tried the vaccine last year and have also tried a stock vaccine without any apparent benefit. I get a marked reaction to both vaccines. I would like your opinion on the kind of climate and the parts of the United States that are most favorable to a chronic bronchitis and bronchiectasis. I would appreciate any suggestions you could offer in the way of treatment. I am robust and healthy looking but have become very toxic and I am hardly able to do my work. A thorough check up has found nothing wrong with me except the bronchitis and bronchiectasis. Please omit name.

M D Texas

ANSWER—It is impossible to suggest any locality that would be of certain benefit and there is nothing except climate which really offers any probability of help. It would be advisable to take some time to investigate personally localities that are removed from the oil fields. The dust will be somewhat difficult to avoid in the Southwest but in cases of bronchiectasis the disadvantage of occasional dusty days are slight when compared to the advantage of an equable, warm, dry climate. A dry air is not necessarily a desideratum, and some patients do well on the seashore. Some place on the Pacific coast or in Florida might be considered. Many patients do very well in Florida. In such a case the question of dust from molds must be considered.

BELL'S PALSY

To the Editor—1 Of what value are the faradic and galvanic current tests in determining the prognosis of an ordinary case of Bell's palsy? 2 How long should one wait before advising operative intervention? 3 What if any are the indications for surgery in this condition? 4 What are the usual surgical procedures now employed? Please use initials only in answering.

M D New Jersey

To the Editor—I have under my care a man aged 54 who has a left-sided Bell's palsy. At the appropriate time I plan to treat him with galvanic stimulation followed by faradic stimulation. What intensity of stimulation should I use in the early course of treatment? What duration of each early stimulation? What frequency of treatment? How long should the treatment continue? Please omit name.

M D Illinois

ANSWER—1 In a case of Bell's palsy the faradic and galvanic currents are used in order to determine the presence of a reaction of degeneration in the involved facial nerve. For example if the muscles and nerve of the affected side react to faradic and galvanic currents, one may say that the paralysis will disappear in about six weeks. If the muscles and nerve do not react to the faradic but react abruptly or slowly to the galvanic current, it may be said that the paralysis should disappear in from six to eight months. If however there is no reaction to either the faradic or the galvanic current, one may say that the facial nerve is so involved as to appear to be anatomically interrupted.

2 One should wait at least eighteen months and only after sufficient treatment to the involved side has been given in the form of galvanic current and massage.

3 The indications for surgery are usually severe ectropion or marked deformity of the mouth and cheek.

4 The usual surgical procedures are an anastomosis with the cut ends of the facial nerve, anastomosis of the facial and hypoglossal nerves or anastomosis of the facial and spinal accessory nerves.

The length of time necessary for the treatment of Bell's palsy is dependent on the reaction of the involved facial muscles and nerves. From ten to fourteen days after the onset of a facial paralysis (Bell's) the involved muscles should be tested with the faradic and the galvanic current to determine

the presence of a reaction of degeneration. One must use only sufficient galvanic or faradic current to produce a contraction, and this should be continued for from eight to twelve minutes three times a week. The length of time of treatment depends on the response of the involved muscles to the galvanic and the faradic current. Light massage to the involved facial muscles should be carried out twice daily for five minute periods. Occasionally a contracture of the involved musculature will develop in a case of Bell's palsy. In these cases it is wise to dispense with all treatment for at least four weeks.

ANGINA PECTORIS

To the Editor—I have under care a patient who is being treated for angina pectoris (a typical case). His symptoms are (1) blood pressure 170 systolic 95 diastolic (2) heart slightly decompensated with occasional moist rales posteriorly pulse 96 and regular (3) attacks of angina of moderate severity which occur following effort of any sort emotional strain or going out into the cold air. The pain radiates to the left shoulder and down the left arm. His treatment has been as follows (1) sodium nitrite (2) theocaine (3) theophylline (4) tincture of iodine (5) glyceryl trinitrate (6) phenobarbital and (7) digitalis. Diet and general care have been advised. The foregoing treatment has been found insufficient. My purpose in writing is to inquire whether you have any information as to whether or not sodium chloride 5 per cent (sterile and distilled) intravenously has ever been used here. I have used the saline injections for endarteritis obliterans (Buerger's) disease with excellent results. Although not specific the good results are thought to be due to (1) increased blood volume and (2) lessened blood viscosity (Beckman). Both these effects would be highly desirable in coronary disease. Do you think that sodium chloride is contraindicated here because of the arteriosclerosis? Please omit name if published.

M D New York

ANSWER—No record of the use of intravenous sodium chloride is available. Any possible beneficial effects would be transitory. Such a procedure would doubtless increase the blood volume for a period the length of which would be determined by the ability of the kidneys to get rid of the excess fluid or sodium chloride. It would probably do more harm than good and possibly harm that could not be undone. The chances of any real or permanent advantage are negligible.

Of the medicines already tried, the theocaine or theophylline, with or without the phenobarbital used over long periods and in adequate dosage, appear to offer the best chances of benefit. The sodium nitrite may lower the blood pressure enough to decrease the coronary flow, and the glyceryl trinitrate should be used only to relieve attacks. Digitalis may have enough of a vasoconstrictive effect on the coronaries to offset any possible advantage and should be used very cautiously and critically. Unless there are specific indications, it is best not used at all.

TREATMENT OF SPASTIC PARALYSIS

To the Editor—Miss D. P. aged 18 had infantile paralysis during infancy her parents do not know at what age. They became aware of it when she attempted to walk. Now her right limbs are somewhat atrophic and spastic. Early in childhood she developed slight brief seizures. These consist of talk which does not make sense, a post-encephalitic gait and expression and periods of excessive elation and depression. She also has major convulsive attacks which are always preceded twenty-four hours or less by foul putrid breath and these major attacks are followed by several minor attacks. The foul breath clears in four or five days and with it the attacks which are repeated at irregular intervals. She eats nothing for two days during the foul breath period. She has been treated as a metabolic and epileptic case. Since two blood sugar tests gave a reading of 72 and 75 mg per hundred cubic centimeters and most of the attacks came several hours after meals and before breakfast hyperinsulinism was suspected but treatment under this theory was not effective. Do you consider the cause of the foul breath the cause of the epileptoid attacks? Attempts to aid digestion and elimination have yielded no adequate result.

M D Illinois

ANSWER—The fact that the right limbs are spastic suggests that the lesion giving rise to the palsy was located in the brain and was not what is usually called infantile paralysis or, better, anterior poliomyelitis. The cerebral lesion would account for the encephalitic type of gait and expression and probably also for the occurrence of epileptic seizures. It is possible also that the cerebral damage may have resulted in disturbance of the vegetative functions of the body. In this sense the epilepsy and the digestive disturbances would be due to a common cause, this is a different view from that which would ascribe the seizures to the digestive upset. Therapy in such cases unfortunately is often of little value. A careful neurologic study is indicated for possible localizing signs. A ketogenic diet is worth trial and should it prove of no advantage, one can do little more than advise general hygienic management with the administration of anticonvulsive remedies such as phenobarbital.

EMPYEMA

To the Editor—March 24. I saw a boy 15 years of age and weighing 250 pounds (113 kg) who had been having a streptococcal sore throat for several weeks. A few days later he developed group IV pneumonia. He was hospitalized and several days later developed scarlet fever. Complications set in in the form of acute nephritis, dilatation of the heart and myocarditis. Also an empyema of pneumococcal origin developed. The latter was aspirated and usually about 2000 cc of pus was obtained. Aspirations were continued for several weeks until it became very difficult to aspirate. May 5 a rib resection was done and the pus evacuated. It was found thinner than expected. A few days later irrigations of the chest cavity were begun with dilute solution of sodium hypochlorite. At the present time the tube is still in the chest cavity with the end in an antiseptic solution in a bottle beside the bed. Little pus is obtained and that perhaps once a day or every other day. Roentgen examination of the chest shows no expansion of the lung. For several weeks after the rib resection the boy blew water through Woulfe bottles but in the past few weeks he has not done so complaining of being dizzy and having a severe headache whenever he blows. He has steadfastly refused to resume the exercise. What other exercise would you advise? His temperature has been normal for the past five or six days but it takes spurts and may go up to 102. His pulse varies from 100 to 120 and his respirations from 20 to 24. What procedure would you advise? Would you remove the drainage tube? Kindly omit name and address if this is published.

M D New York

ANSWER—Since the lung has not expanded after a number of weeks of treatment, and since there are occasional bouts of fever, inadequate drainage of the empyema cavity or a bronchopleural fistula should be considered as possible factors responsible for the chronicity of the condition. If the drainage tube is not on the very floor of the empyema cavity (as determined by probing with a uterine sound or by roentgenograms made after the injection of iodized oil or 15 per cent sodium iodide solution into the cavity) or if the tube is farther forward than the posterior axillary line, the patient should be operated on again to establish completely efficient drainage. The caliber of the drainage tube should be sufficiently great to prevent its occlusion by secretions and the inner end of the tube should be neither too far in the empyema cavity nor buried in the thoracic wall.

Since the patient has recently had evidence of myocarditis and cardiac dilatation, exercises such as those with Woulfe bottles should not be used because of the load that they place on the cardiocirculatory functional reserve.

If in spite of several months of efficient drainage the empyema cavity should fail to become obliterated, and if the patient's heart and kidneys are then in satisfactory condition some effective combination of extrapleural and subsequent Schede thoracoplasty should be considered.

ASPERMIA

To the Editor—A strong vigorous man aged 34 a farmer married eight years has normal sexual desire and normal erections and indulges in the sexual act on an average of once each ten days but never has experienced orgasm or ejaculation during coitus. However about once in every two or three months he experiences nocturnal pollution with some degree of pleasurable sensation. He had no sex experience before marriage and consequently has never had any type of venereal disease. The personal and family histories are negative. The wife appears normal in every way. What pathologic condition can be back of this condition? What line of treatment would be suggested? What is your opinion as to the prognosis?

M D Nebraska

ANSWER—This is an interesting and rather rare condition termed aspermia (lack of expulsion of semen) and is to be distinguished from azoospermia (absence of spermatozoa in the semen). The orgasm or height of the voluptuous feeling is due to the squeezing of the seminal fluid through the ejaculatory ducts, and when this process is absent there can be no orgasm. This explains why during pollution there is some pleasurable feeling.

The condition is due to an obstruction either in the ejaculatory ducts themselves or to their openings into the prostatic urethra. It may also be due to an abnormal nervous mechanism of coitus in which case the semen instead of progressing outward toward the meatus is regurgitated into the bladder. It is therefore important to examine the urine after coitus for seminal fluid (including spermatozoa). The faulty mechanism may be brought about by the patient training himself to retard ejaculation either while spooning or during coitus. The obstruction in or about the ejaculatory ducts may be the presence of strictures or bands in the neighborhood of the opening or even a slight congestion in the prostatic urethra at the ejaculatory openings sufficient to cause swelling that obstructs the openings.

The diagnosis of the obstructive cases can be made by a cystourethroscopic examination observing the openings and, in rare

cases, catheterizing the ducts and if necessary injecting them and having a roentgenogram made. The nervous cases can often be diagnosed by finding spermatozoa or other seminal elements in the urine after coitus.

The treatment depends of course on accurate diagnosis. In cases in which there is merely congestion about the openings, gentle prostatic massage and instillations of weak silver nitrate solutions (from 1:3,000 to 1:500) in the prostatic urethra with the Bangs sound syringe will effect a cure. In cases of strictures of the ducts, gentle catheterizing of these through the urethroscope will effect a cure. In the case under consideration the presence of pollutions at times would seem to indicate that there is no permanent organic obstruction and therefore the mild measures mentioned should effect a cure. The patient must however avoid anything that might bring about unnatural congestion in the prostatic urethra, such as prolonged spooning and coitus interruptus.

TINNITUS AURIUM

To the Editor—A man aged 32 apparently in good health has been troubled by a continuous tinnitus aurium for the past two years. Physical examination including that of the canal and eardrum was negative. There is no history of vertigo or syncope accompanying this condition. In the past year a diagnosis of an irritation at the orifice of the eustachian tube has been made by three competent eye, ear and nose specialists. Treatment by one of the specialists was to inflate the eustachian tube on alternate days for fifteen treatments by another to deflate the eustachian tube on alternate days for fifteen treatments the third specialist had the patient on calcium for fifteen days all with out avail. Thinking that it might be a labyrinth involvement I injected one twentieth grain (0.003 Gm.) of pilocarpine hydrochloride daily for five doses with no results. Foreign protein therapy was also resorted to but with no results. I should like to ascertain the cause and treatment for such a condition.

M D Wisconsin

ANSWER—Tinnitus aurium may be caused by a great variety of lesions of the outer, middle or inner ear and occasionally by intracranial conditions independent of the ear, such as aneurysm. Treatment is effective only when the tinnitus is the result of a condition that can be directly relieved, such as impacted cerumen in the outer canal, traumatic perforation of the drum membrane, acute occlusion of the eustachian tube (in which case a single inflation will give immediate relief but a series of inflations may be necessary to maintain the patency of the tube), suppurative otitis media, toxic labyrinthitis the result of focal infection, neuritis of the eighth nerve from drugs (i. e., acetylsalicylic acid and quinine), acoustic neuroma, and syphilis of the inner ear.

Common causes for tinnitus that cannot be influenced by treatment are otosclerosis (in which the tinnitus may antedate the onset of the deafness by several years and there is often a family history of deafness), senile nerve deafness, degeneration of the organ of Corti the result of acute trauma from a sudden loud noise in the ear such as an exploding firecracker, primary nerve deafness of unknown etiology, and secondary degeneration of the eighth nerve the result of chronic suppurative or non-suppurative otitis media.

When the tinnitus is due to any one of the latter group symptomatic treatment alone is of avail and consists of the administration of small doses of a sedative such as phenobarbital from 0.016 to 0.03 Gm., three times a day.

Most cases of severe tinnitus tend to subside with the passage of time.

INDUSTRIAL DISEASE IN HOSIERY INDUSTRY

To the Editor—What industrial diseases are common in the manufacture of hosiery? Can you furnish me a bibliography on this subject?

M D Pennsylvania

ANSWER—No industrial diseases are common in the manufacture of hosiery but a few occasionally arise their nature depending in some measure on the type of stocking whether silk rayon, cotton or wool. Many of the conditions that have been encountered do not constitute characteristic occupational diseases but rather are the vague results of monotony, noise, vibration and lack of adequate plant sanitation. For example, suicide rates have in times past been considerably higher in this branch of industry than in industry in general and apparently rates are higher for hosiery manufacture than for other branches of the textile industry. At once it is to be noted that present conditions are much superior to those of a generation ago. The literature that has developed around this pursuit scarcely applies to present-day conditions and to some extent may be ignored except for historical purposes. Noise may be the source of occupational deafness or of neuroses. Certain classes of machines lead to tenositis and to related inflammatory disorders of the hands and forearms. The frequency of tuberculosis is believed to be high which in times past has been linked with dust. Perhaps a greater significance (than

is attached to dust as the specific cause) may be given to general work environment, home conditions and low wages. Varicose veins have been attributed to long standing in machine tending in this industry, but it is here recognized that continuous standing is perhaps less injurious than continuous sitting, and that neither is desirable as a continuous practice. Anemia has been reported, but again this may be traced to no specific cause and is known to be common to many branches of the textile industry.

Weston in 1927 established that ocular fatigue was at that time prevalent in the hosiery industry. With the substitution of aniline dyes for mineral dyes the occurrence of lead or arsenic poisoning has largely disappeared. However the dyes as now used, together with agents for lustering, delustering, sizing and bleaching, may give rise to skin diseases in those establishments carrying out such operations. The wearing of hosiery has led to injury caused by dyes (Schwartz, Louis *Pub Health Rep* 49 1176 [Oct 5] 1934). It follows if the wearer of socks incurs damage that the maker of these same socks may be exposed to some extent. In "scrooping," finishing, waterproofing and lustering a variety of chemicals may be used including sulfonated oils, special soaps, acetic, formic and tartaric acid, gums, gelatin, waxes, paraffins, zinc sulfate, barium sulfate, aluminum sulfate, borax and sulfuric acid. Persons may become sensitized to various of these substances so that limited exposure may be followed by a dermatitis. Extensive information of the hazards of the textile industry including the manufacture of hosiery may be found in the International Labor Office publication "Occupation and Health" 2 1031. There a bibliography may be found which, however, chiefly centers about foreign languages.

TREATMENT OF SYPHILIS—TONSILLECTOMY

To the Editor—A woman aged 31 married a housewife had a miscarriage two years ago after having been married for one year. She was then discovered to have syphilis which from subsequent investigation she probably had had for six or eight years (after her first marriage). She was given apparently vigorous antisyphilitic treatment following her miscarriage mainly by intravenous arsenicals. Eight months ago because of pelvic symptoms she had an operation and according to the patient had one ovary both tubes and the appendix removed. Continued antisyphilitic treatment followed the operation. Six months ago she had marked edema of the legs, hands and face. She was told that the urine contained albumin and that she had kidney trouble. She was placed on a diet and antisyphilitic treatments were stopped. Two weeks ago I saw her. At present she complains of hot flashes, palpitation and frequent sore throats. Examination discloses no edema of the face or extremities. The tonsils are large and infected. There is an apparent loss of weight. The urine is loaded with albumin, there are no casts or sugar. The blood nonprotein nitrogen is 33½ mg per hundred cubic centimeters. The blood Kahn reaction is 4 plus. The patient's general condition is fair, her appetite good. There are no reflex changes. Should she have antisyphilitic therapy if so what should be used and how? What should be the best method of treating the renal condition? Is it safe to do a tonsillectomy? Is it safe to coagulate the tonsils with a high frequency coagulator?

M D Massachusetts

ANSWER—If the miscarriage occurred in the early months of pregnancy, it most likely was not caused by syphilis. If it took place in the later months it may have been due to the syphilitic infection. No specific information is given as to why both tubes and one ovary were removed. Surely syphilis is not an indication for such an operation. The hot flashes and perspiration may be endocrinal in origin, based on the assumption that the remaining ovary for some reason or other has ceased to function. The albuminuria and edema of the hands, legs and face are due in all likelihood to an impairment in renal function. This in turn may have resulted from intensive antisyphilitic treatment or it may have resulted from a focus of infection such as the diseased tonsils, which the patient is presumed to have.

More antisyphilitic therapy should be given but because of the renal disturbance great caution must be exercised. Small doses of the heavy metals should be used, but the urine should be carefully controlled for the amount of albumin present, for casts and for the amount of nonprotein nitrogen it contains. The ocular fundi should also be examined from time to time. It is advisable to administer 1 cc of bismuth subchloride intramuscularly once a week for four or six doses. This should be followed by four or six injections of 0.3 Gm of neoarsphenamine given intramuscularly once a week. If any abnormal urinary signs appear this treatment should be stopped. Potassium iodide should be administered by mouth in addition to the use of the heavy metals. Mercuric benzoate may be added to the treatment.

It is a good plan to remove the tonsils in the hope that they may be the source of the kidney damage. Electric coagulation will most likely not give as satisfactory a result as

operative removal of the tonsils, which may readily be performed under local anesthesia

There is no specific way of treating the renal condition other than by treating or removing the cause, which in this case may be syphilis, antisyphilitic treatment or tonsillitis

HABITUAL ABORTION

To the Editor—I should like to consult you regarding the management of an obstetric case. A woman aged 34 is three and one half months pregnant. She has never carried a child to viability but twice previously she has had a spontaneous miscarriage, once at six months in 1922 and once at five and a half months in 1929. So far as I can determine the woman is perfectly healthy except for a nervous indigestion and irritable colon of years standing. The gastro-intestinal symptoms are now and have been with her other pregnancies rather less marked than they are when she is not pregnant. The diagnosis of the gastro-intestinal condition has been made after careful clinical and roentgen studies by an internist of high standing. The urine and blood pressure are normal and always have been. The blood Wassermann reaction is negative. Pelvic measurements are normal. There is a slight endocervicitis but probably no more than a majority of women have. The fetus and placenta that miscarried in 1929 looked perfectly normal so far as I could see. I am giving the patient 1 cc of antuitrin S hypodermically every three days and restricting her activity. She feels quite well at present. However I will say that in 1929 she felt perfectly well until the day she suddenly went into labor and miscarried. How would you handle this case from now on? Would you put her to bed after quickening? She would do almost anything to insure a living child.

M D Iowa

ANSWER—The question of habitual abortion has been answered on numerous occasions in these columns, and little has been added to our knowledge in recent years. If syphilis, tuberculosis, focal infections, hematopathias and avitaminosis can be excluded, and if there is no malformation of the uterus, particularly infantilism and chronic infections, one has to proceed on general grounds, and the question of endocrines comes up. Of late a disturbance of the balance between estrogenic hormones and corpus luteum hormones has been considered as a frequent cause of habitual abortion, and progesterin, which is the corpus luteum hormone, is being administered as a prophylactic. Lack of thyroid is likewise a cause and one might administer it if the basal metabolism rate is below normal or even just normal.

Rest in bed with the foot of the bed elevated from 6 to 8 inches should be insisted on for the full time of pregnancy. This is a hard sentence but deserves carrying out. The diet should of course be rich in vitamins, and calcium also is usually given.

SENSITIZATION TO RUBBER

To the Editor—I am seeking information regarding a dermatitis produced by surgeons' gloves. For the last year and a half I have been the victim of a distressing condition of my hands and they became so inflamed in January that I was told to quit work for a while. February 1 I boarded a slow going ship and remained at sea for six months during which time my hands completely healed. I returned and resumed work on August 1 and I carefully avoided all possible irritating substances as much as possible. I assisted in an appendix operation and in less than six hours my hands were red and the skin was swollen and there was marked itching and burning. They showed evidence of improving in a couple of days. From the first to the twelfth I assisted in four operations and on each occasion a similar reaction occurred. It was more violent on each following occasion. The reaction stops where the glove meets the cuff of the gown. The operator and I felt that it was from contact obtained from and in the operating room. We tested the skin on my forearm to a section of a sterile rubber glove to the talcum with rubber from the glove over it and also to the talcum alone. We left it in contact for one hour. The skin from four to six hours later was very irritated where rubber alone was used mildly irritated where the talcum and rubber was used and gave no reaction where the talcum alone was used. Any information you can pass to me about this condition will be much appreciated as it is very distressing to me.

M D Texas

ANSWER—From the history and the result of the patch tests, this is a case of sensitization to rubber. Such cases of sensitization are due to accelerators used in the process of the manufacturing of rubber. Among the accelerators used, hexamethylenetetramine (methenamine) is the one most irritating to the skin. An outbreak of dermatitis among the linemen wearing rubber gloves in which tetramethyl thiuram disulfide was used as an accelerator was proved to have been due to hypersensitivity to this substance (Osborne E D, and Putnam E D. *Industrial Dermatoses* THE JOURNAL, Sept. 17, 1932, p. 972). Many of the accelerators or antioxidants may come out of the cured rubber in the form of bloom if the curing is not properly done or if too great an amount is mixed with the rubber. Such bloom may cause dermatitis.

Most of the accelerators and antioxidants used are harmless to normal skin, but hypersensitivity may occur toward any of them (Skin Hazards in American Industry, Pub Health Bull 215, October 1934).

Patch testing with rubber gloves from different manufacturers will probably reveal a type that can be used without irritation.

PSYCHIC FRIGIDITY

To the Editor—A woman aged 27, married two years fails to reach a climax in her sexual relations. Occasionally she does attain this climax, but it seems to do her more harm than good as it causes her to be the more resentful when she does not. Neither local nor general physical examination reveals any anatomic reason for her difficulty. Her marital relations are normally conducted and her husband does all in his power to help her obtain sexual gratification. There is no frigidity per se, no dyspareunia, no dislike for the sexual act. Her menstrual periods are normal and regular. She is in good health. The husband is 27 years of age and in good physical condition (I have examined him also). His part of their marital relations seems to be normal as to both manner and result. He is quite concerned about his wife's inability to obtain as much satisfaction as he does from their marital activities. The only method of birth control used is abstinence during the fertile period. The problem may not appear to be serious but nevertheless it has created in this woman a feeling of being cheated and this in turn is the source of an unpleasant undercurrent in an otherwise happy married life. In my instructions to this couple along with a discussion of the anatomy and physiology of the female genitals I made a suggestion that she read erotic literature on occasion. This worked like a charm for a while but now that the reading is a duty it has lost its effectiveness. What course of treatment would you suggest here? Is there any endocrine treatment that might be of use? Please omit name and address.

M D Illinois

ANSWER—The patient apparently has a frigidity of psychic origin. There is probably no physical basis for it, and the administration of organ extracts would not be effective. The patient needs a careful psychiatric investigation in order to determine the basis for her frigidity. It is only by understanding its cause that treatment can be instituted by appropriate psychotherapy.

DINITROPHENOL AND METABOLISM

To the Editor—Kindly inform me whether the use of dinitrophenol can account for a continued high metabolic rate several months after the drug has been discontinued.

RALPH FALK M D Boise Idaho

ANSWER—The peak of the effect of a single dose of dinitrophenol is reached in about six hours and there is complete return to the previous metabolic rate in from two to three days. When dinitrophenol has been given for prolonged periods there is no cumulation of the drug in the body, since the rates of excretion or detoxification soon get in equilibrium with the rate of intake. When the medication is stopped, the drug is practically all excreted within a few days, and the metabolism as promptly returns to its normal level. Therefore there is no basis for suspecting that a metabolism which remains elevated for several months after the use of dinitrophenol has been discontinued is due to the persistent action of the drug. It would seem desirable to make a thorough search for other causes of increased metabolism.

SUPERFECUNDATION—TWINS BY DIFFERENT FATHERS

To the Editor—Please inform me if there is an authentic record of twins by different fathers.

FRANK P NORMAN M D Columbus G

ANSWER—In his book "Life in the Making," A F Gutt macher records two cases of superfecundation, which means the fertilization of two ova within a short period by spermatozoa from separate copulations. Most authorities agree that superfecundation is possible and also that it actually occurs. The two instances recorded concern women giving birth simultaneously to a white and a black child in which there seemed to have been adequate records of intercourse within comparatively short periods with black and white males.

EPHEDRINE AND THE LIVER—EFFECTS OF ALCOHOL ON INSULIN

To the Editor—1 Does ephedrine in any way have a tendency to demobilize the glycogen from the liver as is the case with epinephrine? 2 Does alcohol need to be considered in the dosage of insulin for patients with diabetes when the administration of insulin is necessary?

F J HIRSCHBOECK M D Duluth Minn

ANSWER—1 In very large doses, ephedrine occasionally produces hyperglycemia, but the glycogenolytic action is so weak that glycosuria does not occur.

2 No.

Medical Examinations and Licensure

COMING EXAMINATIONS

ALASKA Juneau March 3 Sec Dr W W Council Juneau
AMERICAN BOARD OF DERMATOLOGY AND SYPHILIGOLOGY Written examination for Group B applicants will be held in various cities throughout the country March 14 Oral examination for Group A and B applicants will be held in Kansas City Mo May 11 12 Sec Dr C Guy Lane 416 Marlboro St Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada March 28 Oral clinical and pathological examination of all candidates will be held in Kansas City Mo May 11 12 Applications for this examination must be received not later than April 1 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)

AMERICAN BOARD OF OPHTHALMOLOGY Kansas City Mo May 11 and New York Sept 26 All applications and case reports must be filed sixty days before date of examination Asst Sec Dr Thomas D Allen 122 S Michigan Ave Chicago

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Kansas City Mo May 11 Applications should be filed with the secretary on or before April 1 Sec Dr Tremont A Chandler 180 N Michigan Ave Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY Kansas City Mo May 9 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PEDIATRICS Kansas City, Mo May 9 Sec Dr C A Aldrich 723 Elm St Winnetka Ill

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY St Louis Mo, May 8 9 Sec Dr Walter Freeman 1028 Connecticut Ave Washington, D C

AMERICAN BOARD OF RADIOLOGY Kansas City Mo May 8 10 Sec Dr B R Kirklin Mayo Clinic Rochester Minn

AMERICAN BOARD OF UROLOGY Kansas City Mo May 8 10 Sec Dr Gilbert J Thomas 1009 Nicollet Ave Minneapolis

ARIZONA Basic Science Tucson March 17 Sec Dr Robert L Nugent Science Hall University of Arizona Tucson Medical Phoenix April 7 8 Sec Dr J H Patterson 826 Security Bldg Phoenix

CALIFORNIA Los Angeles March 9 12 Reciprocity Los Angeles March 18 Sec Dr Charles B Pinkham 420 State Office Bldg Sacramento

COLORADO Denver April 7 Sec Dr Harvey W Snyder 422 State Office Bldg Denver

CONNECTICUT Regular Hartford March 10 11 Endorsement Hartford March 24 Sec Dr Thomas P Murdock 147 W Main St Meriden Homeopathic Derby March 10 Sec Dr J H Evans 1488 Chapel St New Haven

IDAHOO Boise April 7 Commissioner of Law Enforcement Hon Emmitt Pfost 205 State House Boise

ILLINOIS Chicago April 7 9 Superintendent of Registrars Department of Registration and Education Mr Homer J Byrd Springfield

IOWA Basic Science Des Moines April 14 Sec Prof Edward A Benbrook Iowa State College Ames

MAINE Portland March 10 11 Sec Board of Registration of Medicine Dr Adam P Leighton 192 State St Portland

MASSACHUSETTS Boston March 10 12 Sec Board of Registration in Medicine Dr Stephen Rushmore 413 State House Boston

MINNESOTA Basic Science Minneapolis April 7 8 Sec Dr J Charney McKinley 126 Millard Hall University of Minnesota Minneapolis Medical Minneapolis April 21 23 Sec Dr Julian F Du Bois 350 St Peter St St Paul

MONTANA Helena April 7 Sec Dr S A Cooney 7 W 6th Ave Helena

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II May 6 8 June 22 24 and Sept 14 16 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

NEW HAMPSHIRE Concord March 12 13 Sec Board of Registration in Medicine Dr Charles Duncan State House, Concord

NEW MEXICO Santa Fe April 13 14 Sec Dr E LeGrand Ward Santa Fe

OREGON Basic Science Portland March 21 Sec Mr Charles D Byrne University of Oregon Eugene

PURTO RICO San Juan, March 3 Sec Dr O Costa Mandry Box 536 San Juan

WEST VIRGINIA Charleston March 16 State Health Commissioner Dr Arthur L McClue Charleston

WISCONSIN Basic Science Madison April 4 Sec Prof Robert N Bauer 3414 W Wisconsin Ave, Milwaukee

Indiana Reciprocity Report

Dr William R Davidson, secretary Indiana State Board of Medical Registration and Examination, reports 44 physicians licensed by reciprocity during 1935 The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Arkansas School of Medicine	(1933 2)	Arkansas	
College of Medical Evangelists	(1931)	Maine	
University of Colorado School of Medicine	(1927)	Colorado	
Yale University School of Medicine	(1927)	Ohio	
Emory University School of Medicine	(1930)	Georgia	
Bennett Medical College Chicago	(1916)	Arkansas	
Loyola University School of Medicine	(1925)	(1930)	Illinois
Northwestern University Medical School	(1928)	(1930)	Ohio
Ku H Medical College	(1922)	(1929)	(1930)
University of Illinois College of Medicine	(1932)		Illinois
State University of Iowa College of Medicine	(1927)	(1930)	Iowa
Kansas Medical College Kansas	(1905)		Colorado
University of Louisville School of Med	(1928 2)	(1931)	(1933 3)
Johns Hopkins University School of Medicine	(1927)		Kentucky
University of Michigan Medical School	(1918)	(1931)	Tennessee
St Louis University School of Medicine		(1922)	Michigan

Washington University School of Medicine	(1932)	(1933)	Missouri
Creighton University School of Medicine	(1933)		Utah
Ohio State University College of Medicine	(1920)	(1932)	Ohio
University of Cincinnati College of Medicine	(1934 2)		Ohio
Western Reserve University School of Medicine	(1929)		Ohio
University of Oklahoma School of Medicine	(1930)		Oklahoma
Hahnemann Medical College and Hosp of Philadelphia	(1933)		Ohio
Jefferson Medical College of Philadelphia	(1922)		Penna
Meharry Medical College	(1934)		Tennessee
University of Virginia Department of Medicine	(1930)		Virginia
Marquette University School of Medicine	(1932)		Wisconsin
University of Manitoba Faculty of Medicine	(1930)		Illinois

Maine November Examination

Dr Adam P Leighton, secretary, Maine Board of Registration of Medicine reports the written examination held in Portland, Nov 12-13, 1935 The examination covered 10 subjects and included 100 questions An average of 75 per cent was required to pass Thirteen candidates were examined, 12 of whom passed and 1 failed Two physicians were licensed by reciprocity and 5 physicians were licensed by endorsement after an oral examination The following schools were represented

School	PASSED	Year Grad	Per Cent
Georgetown University School of Medicine	(1935)		86 3
Boston University School of Medicine	(1935)		83 2
Harvard University Medical School	(1901)		75 6
Tufts College Medical School	(1933) 84 9	(1934)	83 7
	(1935) 84 3 84 6 86 2		
Columbia Univ College of Physicians and Surgeons	(1935)		80 7
Hahnemann Medical College and Hosp of Philadelphia	(1935)		81 9
University of Wisconsin Medical School	(1934)		88 4
Queen's University Faculty of Medicine	(1934)		82 6

School	FAILED	Year Grad	Per Cent
Regia Università degli Studi di Roma Facoltà di Medicina e Chirurgia	(1931)*		66 2

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Dartmouth Medical School	(1897)		New Hamp
University of Vermont College of Medicine	(1920)		Vermont

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
College of Medical Evangelists	(1935) N B M Ex		
Boston University School of Medicine	(1930) N B M Ex		
Harvard University Medical School	(1925) (1931)	(1932)	N B M Ex

* Verification of graduation in process

Virginia December Report

Dr J W Preston, secretary, Virginia State Board of Medical Examiners reports the written examination held in Richmond, Dec 11-13, 1935 The examination covered 8 subjects and included 80 questions An average of 75 per cent was required to pass Eight candidates were examined 7 of whom passed and 1 failed Fourteen physicians were licensed by reciprocity and 7 physicians were licensed by endorsement The following schools were represented

School	PASSED	Year Grad	Per Cent
Howard University College of Medicine	(1934)		81
School of Med of the Div of the Biological Sciences	(1935)		88
University of Maryland School of Medicine and College of Physicians and Surgeons	(1934)		87
Tufts College Medical School	(1935)		85
Duke University School of Medicine	(1934)		82
Medical College of Virginia	(1935)		82
University of Virginia Department of Medicine	(1933)		77

School	FAILED	Year Grad	Per Cent
Leonard Medical School North Carolina	(1910)		41

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Howard University College of Medicine	(1934)		Tennessee
Chicago College of Medicine and Surgery	(1916)		W Virginia
University of Louisville Medical Department	(1911)		Kentucky
University of Louisville School of Medicine	(1932)		Kentucky
Tulane University of Louisiana School of Medicine	(1932)		Louisiana
University of Maryland School of Medicine and College of Physicians and Surgeons	(1917) W Virginia	(1934)	Maryland
University of Pennsylvania School of Medicine	(1917)		Penna
Meharry Medical College	(1934 2)		Tennessee
University of Tennessee College of Medicine	(1933)		Tennessee
Vanderbilt University School of Medicine	(1932)		Tennessee
University of Virginia Department of Medicine	(1930)		W Virginia

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
University of Colorado School of Medicine	(1934) N B M Ex		
Johns Hopkins University School of Medicine	(1933) N B M Ex		
University of Maryland School of Medicine and College of Physicians and Surgeons	(1933) N B M Ex		
University of Minnesota Medical School	(1931)		U S Navy
Columbia Univ College of Physicians and Surgeons	(1930) N B M Ex		
Duke University School of Medicine	(1933 2) N B M Ex		

Book Notices

Diseases of the Liver Gall Bladder Ducts and Pancreas Their Diagnosis and Treatment By Samuel Weiss MD FACP Clinical Professor of Gastroenterology N Y Polyclinic Medical School and Hospital Chapter on Surgery by J Prescott Grant MD FACS MRCs Professor of Surgery N Y Polyclinic Medical School and Hospital Chapter on Roentgenology by A Judson Quimby MD FACP Professor of Roentgenology N Y Polyclinic Medical School and Hospital Cloth Price \$10 Pp 1 099 with 364 illustrations New York Paul B Hoeber Inc 1935

This volume consists of 931 pages of reading material and nearly 100 pages of references, of which less than one third are quoted in the text. The latter simply contribute to the bulkiness of the book that is already big. What one looks for in a book by a single author is not simply an accumulation of everything ever mentioned by various writers but a systematic, analytic and evaluated statement of facts in which two things should stand out: a clear cut clinical picture of the disease under discussion from which one can benefit by the author's experience and an evaluation of the work of others in such a way that the reader can obtain a definite opinion of what is important and what is not. The reviewer, who spent considerable time and effort in examining this book, was desirous of being fair and sought information. The author undoubtedly spent an enormous amount of time and energy in getting out this large compilation, which is encyclopedic in character, but he has failed to inject that personal touch which causes a book to stand out from the multitude. Quotations from as yet unaccepted work are given undue prominence. The section on clinical and experimental physiology is quite large but frequently fails to state prevailing opinions. Some extravagant therapeutic claims for the pancreatic hormones are made here. Considerable space is devoted to a discussion of the tests of liver function, but the reader is at loss to know which ones are preferable. It would be interesting to know how hippuric acid finds its way in duodenal contents obtained by biliary drainage. It is not clear why furred tongue, heartburn and hematemesis with various cardiac, renal, neurologic and dermatologic manifestations are referred to as functional. It is generally accepted that the tests for liver dysfunction have their real value in fairly advanced hepatic disease. Still the author states that the newer tests of liver function are of value in the diagnosis of early mild hepatic insufficiency. It should be emphasized that in well developed acute yellow atrophy sugar is made available far better by venoclysis or hypodermoclysis than by proctoclysis. The Hanot-Gilbert and the Hanot biliary cirrhosis are described as different diseases but are not separated in the charts of differential diagnosis. The chapters on cholecystitis and cholelithiasis are probably the best but still are lacking in what has already been mentioned. The chapter on the medical treatment of gallstones is a veritable hodgepodge. The author gives space to listing a multitude of remedies and measures for the condition, as though medically curable. High enemas and low enemas, calomel and intestinal antiferments seem to have their indications. Cholecystitis, it appears, may be prevented by biliary disinfectants, such as methenamine, salicylates and ammonium chloride in 7½ grain (0.5 Gm) doses. Hyperchlorhydria must be avoided, it is said, because it leads to gallstone formation. Saline laxatives, especially sodium phosphate, bismuth subnitrate and sodium bicarbonate before meals and a proper diet in the presence of inflammatory catarrhal conditions of the duodenum and stomach it is intimated will prevent the infection of the biliary tract and the formation of gallstones. The author quotes the ridiculous report of the cure of carcinoma of the gallbladder and the passage of fifty-two calculi by the use of olive oil. Solution of posterior pituitary, chloretics, chologogues, salines and various herbs in shotgun prescriptions are mentioned as remedies for gallstones. Biliary drainage finds an ardent supporter in the treatment of cirrhosis, dermatoses, arthritis of biliary origin and cystic duct obstruction on a catharrhal basis. The chapters on pancreatic disease are not as complete as the rest of the book. Those on surgical treatment by J Prescott Grant and on roentgenology by Judson Quimby are satisfactory. There are many excellent illustrations, charts and diagrams.

Les astereognosies Pathologie du toucher Clinique physiologie topographie Par J P L Delay Preface du P^r Guillaum Paper Price 65 francs Pp 524 with 19 illustrations Paris Masson & Cle 1935

This book discusses in detail the pathology of loss of ability to appreciate objects or things by means of feeling or touching (astereognosis). All the work was done in the neurologic clinic of Salpêtrière under the supervision of George Guillaum and in the laboratory of physiology of sensations in the College of France under the supervision of H Pieron. Delay includes three syndromes in his study of astereognosis. They are (1) l'amorphognosie, (2) l'ahylognosie and (3) l'asymbolic tactile. L'amorphognosie is a term given to that condition in which there is an inability to appreciate the form, length and spatial qualities of an object. L'ahylognosie refers to inability to appreciate the density, thermic conductivity, rugosity and molecular qualities of an object. The asymbolic tactile is the inability to appreciate the species or use of an object. The book is divided into six parts. The first part is further subdivided into three chapters. They are definition and classification of astereognosis, the two classic conceptions of astereognosis and the analysis of touch. The second part is subdivided into definition of elementary sensations, method of examination of elementary sensations and the anesthetics and sensory abnormalities. The third part consists of three chapters on the ahylognosias and the difficulties of detailed analysis. The fourth part discusses in three chapters the amorphognosias and the difficulties of spatial analysis. The fifth part is subdivided into three chapters and discusses the tactile asymbolia and semantic agnosias. The sixth part is made up of nine chapters and discusses special studies of astereognosis in detail. This book is highly recommended for use to all neuropsychiatrists and students interested in cortical and spinal as well as peripheral abnormalities of sensation related to stereognostic function. There is a detailed bibliography consisting of thirty-nine printed pages.

The Medical Man and the Witch During the Renaissance By Gregory Zilboorg MD The Hildeyo Noguchi Lectures Publications of the Institute of the History of Medicine The Johns Hopkins University Third Series Volume II Cloth Price \$2.50 Pp 215 with illustrations Baltimore Johns Hopkins Press 1935

The author is a student of Bekhterev, graduate of the psychoneurologic institute of Petrograd, psychiatrist at Bloomingdale Hospital, and a specialist in the field of the history of medical psychology.

The psychiatrist is of necessity deeply concerned with the cultural background and genetic origins of his patient. The general tendency among this class of medical specialists to be more interested in the historical bases of medicine than are physicians devoted to other specialties thus seems to have a psychologic origin. Psychiatry, more than any other field of development in modern medicine, must understand the mental atmosphere environing the patient, but the knowledge of today cannot be utilized as a guide to the problems of the mentally sick as they confronted the physician of earlier days, especially of days when astrology, magic and witchcraft polluted the social atmosphere. Dr Zilboorg's investigations enable us to comprehend more fully the bedevilment which afflicted states and communities, the bases for the mass psychoses, the legally authorized tortures and cruel burnings of deranged women and frightened children. Most of all, they clearly set forth the significance of the writings of Weyer, who, as physician, sought by direct observation and intensive study of mental cases, which were sometimes brought into his own home for more intimate observation, to develop an objective point of view of mental aberrancy and to establish the obligation of the physician to care for such cases and the rights of the accused person to have medical care rather than the judicial consignment to the torture chamber and stake. The work of Weyer is the more remarkable, as it flew directly in the face of custom and was without benefit of a Kraepelin or a Freud.

The three chapters deal respectively with (1) the physiologic and psychologic aspects of the Malleus Maleficarum (The Witch's Hammer), (2) medicine and the witch in the sixteenth century and (3), Johann Weyer, the founder of modern psychiatry.

The Witch's Hammer (about 1487-1489) was the work of two Dominican monks, Johann Sprenger and Heinrich Kramer,

appointed by Pope Innocent VIII in 1484 to uncover, apprehend and try witches and wizards in the Rhine provinces and in northern Germany. This volume became the textbook of the Inquisition. It was printed ten times before 1669 and ran through ten editions in the following century. This book, a heavy volume in quarto, has been characterized as "so insane, so raw and cruel, and it leads to such terrible conclusions, that never before or since did such a unified combination of horrible characteristics flow from a human pen."

The second part presents a series of "case histories" with a view of showing how little, or much, the physician played a part in the tragedies typical of these times. This is truly an exceedingly difficult task, largely obscured by extraneous affairs and best illustrated in only a relatively few instances in medical literature of the day.

The concluding part analyzes the writings of Johann Weyer (1515-1588), a student of Cornelius Agrippa in Bonn, and thus in the tradition of Paracelsus and Erasmus, with a degree in medicine from Paris, city physician at Arnheim and personal physician throughout his later life to the enlightened and liberal Duke Wilhelm of Julich-Cleve-Berg. Weyer looked on the demoniacal world about him as an enormous clinic teeming with sick people, he made clinical analyses of cases, ransacked the literature of the field, called on the encowled ignorant monks to leave the management of witches and the bewitched to physicians, and to reduce expenses by putting logs and fagots to a better use than in attempting to destroy errors by destroying human beings. He protested that witchcraft was a delusion, that witches could do no harm to men or animals, and that "no one can more correctly judge these things than we physicians, whose ears and hearts are being constantly tortured by this superstition."

Weyer's scientific ability is also demonstrated in his lucid account of what appears to have been trichinosis, of English sweating sickness, of syphilis, of "pestilential cough" (influenzal pneumonia), of erysipelas and of scurvy. With psychological perspicacity he unraveled the clinical history of these bewitched persons in whose bodies devils had deposited various and odd foreign bodies. He investigated and applied surgical aid to atresias of the new-born and to the relief of suppressed menstruation. He denounced superstition as heathenism and scathingly attacked quackery and nonmedical methods of magic and exorcism, exposed malingerers, and, although his writings show clearly that he had not arrived at a disbelief in the devil, he devoted his life to banishing him and all his works from their enormous, appalling and malevolent action in human affairs.

An indirect consequence of the recognition of the psychiatric factor in disease, initiated by Weyer, has been that the medical profession has displaced the devil (perhaps in some individual instances replaced him) and has thereby progressively risen to ever higher levels of opportunity power and responsibility in human affairs.

The Epidemiology of Pneumonia on the Witwatersrand Goldfields and the Prevention of Pneumonia and Other Allied Acute Respiratory Diseases in Native Labourers in South Africa by Means of Vaccine. By Sir Spencer Hister LL.D. MRCS. LRCP. Director of the Institute and David Ordman B.A. MB ChB. Department of Bacteriology. The South African Institute for Medical Research. With the following relative papers: (1) Prophylactic Inoculation Against Pneumonia and Other Acute Respiratory Diseases with Vaccine on the Randfontein Estates Mine. By P. A. Peall MB MRCS LRCP. Senior Medical Officer. Randfontein Estates Gold Mining Co. Ltd. (2) Pneumonia in the Native Mine Labourers of the Northern Rhodesia Copperfields with an Account of an Experiment in Pneumonia Prophylaxis by Means of a Vaccine on the Roan Antelope Mine. By D. Ordman B.A. MB ChB. Department of Bacteriology. The South African Institute for Medical Research. Publications of the South African Institute for Medical Research No. XXXVII (Vol. VII) Paper. Pp. 124 with 21 illustrations. Johannesburg: South African Institute for Medical Research 1935.

A twenty four year study is reported on the prophylaxis of pneumonia among miners in South Africa with autogenous vaccine. The population at any one time totaled about 200 000 natives from various sections of South Africa exclusive (after 1918) of those from north of latitude 22° S as a result of their high degree of susceptibility to respiratory infections. The men worked through periods of from six months to a year, and no follow up study of their health after leaving the mines is

reported. Studies were made of housing and sanitary conditions in the mines and in the barracks, and also of the diet of the miners. Any changes made apparently had little effect on respiratory infections. No information is given as to the age of the individuals studied.

The investigation is divided into three periods: first, 1911-1913, a review of Wright's work with mixed pneumococcus vaccine; second, 1913-1925, in which the vaccine used continued for the most part freshly isolated pneumococci of the groups as classified by Lister; and third, 1926-1934, in which the vaccine was modified because the respiratory infection was observed to change from a pneumococcal pneumonia to a mixed infection due largely to the streptococcus, the staphylococcus and Friedlander's bacillus.

A lower incidence and mortality rate among the inoculated men as compared to the noninoculated in the second period was explained by the use of three injections of mixed types of pneumococcus vaccine. But in 1926, even though this vaccine was used, a rise in incidence and mortality rate led to a study of the causative agent. On discovery of a change in the bacterial flora to the streptococcus, the staphylococcus and Friedlander's bacillus instead of various types of pneumococci, a fresh autogenous vaccine was made from these strains along with type B pneumococcus (American type II). This vaccine was injected in men in some of the so called bad mines, and men in other "bad mines" were considered controls. During 1930-1933 a reduction of more than 50 per cent occurred in both incidence and mortality among the inoculated group as compared to the noninoculated. Although injections were made in small numbers of men, the authors stated that this reduction was significant as compared to the incidence and mortality in the entire mine area.

The study is of special interest because of the observation of the change in bacterial flora from a pneumococcus prevalence to a pneumococcus absence in respiratory infections. Following injection of autogenous pneumococcus vaccine there was a reduction in the incidence and mortality of pneumococcal lobar pneumonia, and following injection of autogenous vaccine containing the prevalent organisms other than pneumococci there was also a decrease in the incidence and mortality rate due to respiratory diseases. The authors assume that a virus is the etiologic agent of the respiratory diseases and that the organisms isolated were possibly secondary invaders. No proof of this supposition is given.

Woman. An Historical Gynaecological and Anthropological Compendium. By Hermann Heinrich Ploss Max Bartels and Paul Bartels. Edited by Eric John Dingwall. In three volumes. Cloth. Price £2 8s per set. Pp. 655 822 543 with 1 009 illustrations. London: William Heinemann Ltd. 1935.

The first edition of Ploss and Bartels' notable work appeared in Germany in 1885, the second was published in 1887, and the ninth edition appeared in 1908. In 1927 an eleventh edition was issued in which much supplementary material and photographs were added. Thus the book becomes a well established source book of information on the anthropology, gynecology and ethnology of women.

In the present edition E. J. Dingwall has slightly modified the text in the interest of new evidence and has introduced new material. More space is devoted to anatomy, to crime and to the social sciences than was given in any of the German editions. In preparing this text the author has had the assistance of many competent British scholars.

The book is developed now in three volumes. The first volume discusses the anthropology, psychology and anatomy of the female as they are distinguished from the male. The second part of the first volume concerns the social status and position of woman in civilization from the earliest times, and then the girl from birth to the time of puberty. Here are given the superstitions and religious beliefs associated with menstruation.

The second volume deals primarily with the process of birth, beginning with the sex relationships, discussing love, courtship and marriage, sterility and fertility, pregnancy, the hygiene of pregnancy, abortion, processes of childbirth and superstitions. There are excellent chapters on the history of obstetrics, its practice among various foreign peoples and finally the care of the afterbirth.

The final volume continues with discussions of labor and the puerperium, cesarean section and lactation. Here are special sections on the beliefs associated with the development and care of the breasts. Other chapters concern the old maid, woman as a saint, the widow, the menopause, old age, and death.

The book is handsomely printed on fine enameled stock. It is profusely illustrated with thousands of pictures (some in colors) and there is a tremendous bibliography.

Stop Light. By William Louis Poteat. Professor of Biology, Wake Forest College, Wake Forest, N. C. Cloth. Price 75 cents. Pp. 91. Nashville: Broadman Press, 1935.

This is not temperance education, though it pays lip service to the principle of education as opposed to propaganda. It is propaganda for national prohibition, not education in the effect of alcohol on the health of the user. "I seek," says the author, "to arrest attention and direct it upon the elementary and undisputed facts of beverage alcohol as they are presented in the cold science of the time." In another place, "we seek the fact, the truth, no fancy, no theory, no extravagance of fanaticism, no interested perversion of the propagandist, will be allowed a hearing." Having thus vehemently castigated the propagandist, the author proceeds to write four chapters of pure propaganda, which would have been better and more worthy of respect as propaganda if it had been presented frankly for what it is, since obviously the author, or any one else, has a right to crusade for prohibition by legislative fiat if he has not learned that such a procedure is psychologically unsound. The reviewer holds no brief for or against prohibition, as long as the rights of the physician to decide as to the merits of alcohol as a therapeutic agent are not curtailed. He does hold, however, that propaganda is not the same as education. The author's chapter on the history of alcohol contains a few citations from ancient literature and much material laudatory of more or less modern organizations devoted to prohibition. The chapter on physiology, besides being incomplete as compared with other recent popular works on alcohol, is definitely colored to emphasize the views of the writer and to minimize opposing opinions. This book is a good choice to recommend for the reading of those whose minds are already made up in favor of national prohibition by law, and who want the comfort of confirmation. The skeptic or the opponent of the author's views will hardly be convinced by the evidence presented or the manner of its presentation. The seeker for facts "in the cold science of the time" will find better choices in other recent popular books on alcohol.

Report of the Sixth Australian Cancer Conference Held at Canberra 13th-17th May 1935. Commonwealth of Australia. Paper. Pp. 54 with 8 illustrations. Canberra: L. F. Johnston, 1935.

The sixth Australian cancer conference was convened by the director general of health, Commonwealth Department of Health, and met in Canberra from Monday to Friday, May 13-17, 1935. The conference, after a full morning's discussion of the many aspects, passed resolutions adopting Dr. Holmes's review and recommending the formation of a national organization along the lines indicated in that review and the appointment of liaison officers in the commonwealth and states. It was decided that the next meeting of the Australian cancer conference should be held in Melbourne but that every second year the conference should be held in Canberra. The arrangements for the next conference was left in the hands of the commonwealth department of health in consultation with the Royal Australian College of Surgeons, and an agenda committee was selected. The conference also passed a resolution supporting the proposal for the early establishment of a Medical Research Council.

In order to pave the way for more complete understanding and effective cooperation on the part of general practitioners in the developments for the control of cancer, the conference recommended that the universities should introduce into the medical curriculum some instruction in radiotherapeutics. The subject of roentgen therapy received a large amount of attention of the conference. The question of physical investigation into the problems of the radiotherapists and of assistance to radiotherapists in overcoming their difficulties in relation to the determination of the quality of x-rays used in treatment, the dosage administered at varying depths in the tissues, and other aspects has received much attention during the year.

There follows a review of research carried out by the Cancer Research Committee of the University of Sydney during 1934. Dr. Sande's report to the federal government of Australia is presented in three parts: publicity, treatment and research. After an excellent review of the cancer problem as observed in various American and European centers, he concludes with the following recommendations:

To secure improved cooperation between the states I suggest that the government should give serious consideration to the establishment of an Australian cancer commission as an independent body with statutory endowment to deal with the three main aspects of cancer work: firstly cancer publicity, secondly cancer treatment and thirdly cancer research. One of the commissioners should be a publicist, another a therapist and the third a scientist. These men should be in the active period of life with vision, driving power and experience of the different aspects of the work. They might be between 35 and 45 years of age and if they prove themselves, might be expected to hold office for ten or fifteen years. They may need consultant or departmental assistance but I think they should be independent of any existing organization and responsible only to the minister or to parliament.

The report is comprehensive and well presented. It should be read by all those who are interested in problems of organization as related to cancer control.

Die Haut und Geschlechtskrankheiten. Eine zusammenfassende Darstellung für die Praxis. Herausgegeben von Prof. Dr. Leopold Arzt und Prof. Dr. Karl Zieler. Lieferung 25. Band I. Verhütung und Bekämpfung der Geschlechtskrankheiten. Von Prof. Dr. Julius K. Mayer. Nichtvenereische Krankheiten der Geschlechtsorgane. Balanitis, Phimose und Paraphimose. Von Prof. Dr. W. Frel. Die nichtgonorrhoeische Harnröhrenentzündung. Von Prof. Dr. Gustav Scherber. Induratio penis plastica. Von Prof. Dr. Gustav Scherber. Ulcus vulvae acutum (Ulcus pseudotuberculosis). Scheldenbazillengeschwüre. Von Prof. Dr. Gustav Scherber. Alute Gangrän der äusseren Geschlechtsorgane. Von Prof. Dr. Gustav Scherber. Titel und Inhaltsverzeichnis zu Band I. Paper. Price 9.40 marks. Pp. 525, 690 with 35 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1935.

Die Haut und Geschlechtskrankheiten. Eine zusammenfassende Darstellung für die Praxis. Herausgegeben von Prof. Dr. Leopold Arzt und Prof. Dr. Karl Zieler. Lieferung 26/27. Band II. Die bösartigen Geschwülste der Haut. Von Prof. Dr. Leo Kumer und Prof. Dr. Franz Josef Lang. Gutartige Neubildungen der Haut. Von Prof. Dr. Leopold Arzt und Prof. Dr. Herbert Fuhs. Fragliche Neubildungen und nahestehende Krankheiten. Von Prof. Dr. Alfred Stuhmer. Titel und Inhaltsverzeichnis zu Band II. Gesamt Sachverzeichnis. Paper. Price 28.50 marks. Pp. 829, 1192 with 297 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1935.

The final instalments (25, 26 and 27) of this comprehensive work deserve additional laudatory comment. In the section on nonvenereal diseases of the generative organs is a valuable contribution by Professor Frei on the different forms of balanitis and another one by Professor Schreiber on ulcer vulvae acutum. The chapter on malignant tumors by Kumer and Lang occupies 145 pages and that by Arzt and Fuhs on benign tumors of the skin 190 pages. The colored and black and white illustrations of clinical cases are unusually numerous and well selected and there are many excellent reproductions of photomicrographs. The completion of this masterly work together with a comprehensive index should be a source of gratification to the editors and publishers alike and will be welcomed by students of dermatology.

The Parathyroids in Health and in Disease. By David H. Shelling. B.Sc. M.D. Cloth. Price \$6. Pp. 335 with 26 illustrations. St. Louis: C. V. Mosby Company, 1935.

This is an excellent discussion of a subject of far wider scope than the title indicates. Each chapter carries its own bibliography of well selected references, not necessarily complete but comprehensive and representative. One wonders just why the pathology of the parathyroids was discussed before the physiology. The contents of the first four chapters, embracing the history, the anatomy, the pathology and the physiology of the parathyroids, constitute conservative discussions with, however, little that is not found in other recent reviews, except that the author has enlivened the material sufficiently to bring it out of the class of a dry review. The discussion of the parathyroid hormone is brief, concise and well supported by experimental evidence, considerable space is devoted to bioassay. In the next two chapters there is a wealth of material on the clinical physiology, particularly that relating to bony tissues and to the reticulo-endothelial system, much of which has never before appeared in any review. There is one short chapter on

the relations of the parathyroids to other endocrine glands, all based on well authenticated experimental results, there is a short chapter on the relation of vitamin D to parathyroid function, devoted mainly to an alignment of evidence for and against the theory that the vitamin acts through the parathyroids. This is the high light of the book, since a logical reconciliation of the facts is brought about in a masterful manner and the reader closes the chapter with a feeling of satisfaction. The final chapter is devoted to a timely discussion of the therapeutics of the parathyroid hormone, from which the reader obtains a clear notion of the contraindications. Some of the illustrative charts are too complex for the general reader to interpret. The anatomic and microscopic illustrations are apparently original or reproductions of originals in previously published work of the author or his associates. Despite the many points of excellence, the price seems rather out of proportion when the book is compared with monographs of similar scope on other subjects. Nevertheless the timeliness of subject matter and the general excellence of presentation should recommend it both to the physician and to the investigator.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Expert Testimony Right of Attorney to Obligate Client to Pay Fee of Expert Witness—The defendant in this case had been injured in an accident. The physician-plaintiff, a roentgenologist, interpreted certain roentgenograms for her attending physician and was paid for doing so. Subsequently she sued the corporation that she held responsible for her injuries, and her attorney requested the physician-plaintiff to testify on her behalf as an expert witness in that suit. The defendant herself did not expressly employ the physician-plaintiff, but she was present at the trial in the course of his testimony and, without objection on her part, listened to it. She refused to pay for the services thus rendered, however, and the physician plaintiff sued to recover their value. The defendant did not deny the necessity for his testimony as an expert witness or the reasonableness of his fee, but she denied that she had employed him or that her counsel had authority to employ him on her behalf. On motion of the defendant, the trial court withdrew the case from the consideration of the jury, on the ground that the evidence did not support the plaintiff's claim. The physician-plaintiff thereupon appealed to the supreme court of New Jersey.

An attorney, said the supreme court, has no authority under his retainer to surrender or waive without the consent of his client any substantial legal right. But when the defendant's attorney obligated his client to the extent of \$100, he did not surrender or waive any of his client's substantial rights. His act was that of a careful and prudent attorney, to protect and promote his client's interest. It is common knowledge, said the court that, when one has sustained serious injuries, roentgenograms are frequently made by experts to determine the nature and extent of such injuries, that an expert is necessary to interpret such roentgenograms and that it is common practice to use the testimony of such experts whenever available, in a suit to recover damages for such injuries. Furthermore, continued the court if the propriety of a challenged expenditure for which the defendant denied liability is to be judged by the result obtained the defendant's failure to challenge either the necessity of the expert testimony given or the reasonableness of the fee charged is readily understood, in the case in which such testimony was given the defendant in this case who was the plaintiff there, recovered a verdict of \$15,000.

It is far from a mere conjecture said the supreme court that if the attorney had failed to produce this expert testimony—and he could not produce it unless it was volunteered without arranging for the payment of the expert—he might well have subjected himself to a claim of negligence, at the suit of his client. The supreme court was of the opinion therefore,

that an attorney who is retained to prosecute a suit for damages arising out of an accident has implied authority to obligate his client to pay the fee of an expert witness whom he employs to testify in behalf of such client, when the necessity for such a witness and the reasonableness of his fee are not challenged. Accordingly the supreme court reversed the judgment of the trial court withdrawing the case from the jury.—*Altem v. Boylan (N J)*, 179 A 638.

Malpractice Joint Liability of Physicians—The defendant Canfield, with the assistance of defendant Van Ark treated the plaintiff's fractured leg. The plaintiff, alleging negligence, sued both physicians. The jury returned a verdict for the plaintiff, "\$4,000 on Mr [Dr] Wilson Canfield and \$2,000 on Bert Van Ark." The trial court rejected this verdict and directed the jury to retire again to the jury room, after instructing them as follows:

You will retire to your jury room for reconsideration of your verdict. If you find both of these defendants guilty of negligence you will return a verdict in one sum against both defendants for the total amount of plaintiff's damages.

The jury then returned a verdict for \$6,000 against both defendants. Dr Van Ark appealed to the Supreme Court of Michigan.

Each defendant, said the Supreme Court, while serving with the other is answerable for his own conduct and also for the conduct of the other which he either observed or in the exercise of reasonable diligence should have observed, for their joint acts of commission or omission both defendants are liable. An act done by one, however, in the absence of the other, unless done by agreement between them, cannot be attributed to the defendant who did not participate in it. Lack of skill or care on the part of Dr Canfield, in the absence of Dr Van Ark, cannot be charged against the latter. The jury, continued the court, by its first verdict, awarding damages amounting to \$4,000 against Dr Canfield and \$2,000 against Dr Van Ark, evidently found Dr Canfield guilty of malpractice, not only jointly with Dr Van Ark, but also separately from him. For the joint malpractice a single-sum verdict could be returned, for the malpractice of Dr Canfield alone, no such verdict was permissible. The judgment entered on the second verdict was manifestly erroneous as to Dr Van Ark. It failed to distinguish between the joint liability of the defendants and the liability of each of them separately, and it held Dr Van Ark liable to respond in damages for malpractice of Dr Canfield in which Dr Van Ark was not a participant.

The court reversed the judgment against Dr Van Ark and ordered a new trial.—*Rodgers v Canfield (Mich)*, 262 N W 409.

Pharmacy Practice Acts Validity of Provisions Limiting Registration to U S Citizens—The California pharmacy practice act (St 1905, p 536, sections 2 and 3, as amended St, 1933, p 2192) forbids the registration of persons who are not "citizens of the United States." Accordingly, the California state board of pharmacy refused to examine Sashihara and certain other applicants who came within this prohibition. The rejected applicants thereupon petitioned for a writ of mandamus to compel the board to examine them. The trial court entered a judgment for the board, and the plaintiffs appealed to the district court of appeal second district, division 2, California.

The plaintiffs contended that the provisions of the pharmacy practice act referred to were invalid because in conflict with a treaty entered into between the United States and the nation of which they were subjects, which permitted citizens or subjects of each of the high contracting parties to carry on trade, to own shops and generally to do anything incident to or necessary for trade on the same terms as native citizens or subjects. The matter the district court of appeal answered resolves itself into the question Is the occupation of being a pharmacist a trade or a profession? If it is a trade the treaty is violated, if it is a profession, the treaty is not violated. In this connection it is necessary to keep in mind the distinction between the business or trade of a druggist as the owner or operator of a drug store, and the practice of pharmacy as such. A pharmacist compounds prescriptions and in so doing he is exercising his knowledge of the science of pharmacy but who-

ever sells the compounded prescription to a customer, in so doing, acts as a clerk or as a merchant. The statute under discussion does not prevent aliens from operating or owning drug stores or working as clerks therein, it merely prohibits them from being registered as pharmacists and from compounding prescriptions. The court was satisfied that the practice of pharmacy is a profession and that therefore the pharmacy practice act was not in violation of the treaty referred to.

The plaintiff next contended that the requirements under discussion constituted an abuse of the police power, created an arbitrary and discriminatory classification, and denied to aliens the equal protection of the laws. We are satisfied, said the district court of appeal, that the object sought to be accomplished by the legislation in question is the protection of the public health, safety, and general welfare, and that there is a reasonable relation between that object and the means adopted. This court cannot say that the classification excluding aliens is palpably arbitrary. In the practice of pharmacy, chemicals and poisons are constantly used and compounded. If not handled with great caution, much harm might be inflicted. And it is obvious from these facts and others that there may be a reasonable basis for the existence of the discrimination against aliens and therefore that the act under discussion is not an abuse of the police power. The pharmacy practice act, accordingly, the court held, did not deny aliens the equal protection of the laws.

The court accordingly affirmed the judgment of the lower court, dismissing the petition for a writ of mandamus—*Sashihara v State Board of Pharmacy (Calif)*, 46 P (2d) 804.

Accident Insurance Death from Degeneration of Liver Attributed to Trauma—The plaintiff was the beneficiary under two life insurance policies issued to her husband by the defendant insurance company. Each policy provided for double indemnity if the insured should die directly from bodily injury effected solely through external violent, and accidental means, with the proviso, however, that if such accidental death should result directly or indirectly from bodily or mental infirmity or disease double indemnity would not be payable. On Nov. 19, 1930, the insured in entering a building through a window, stepped on a table, which shot from under him, throwing him on his back on the cement floor. He had therefore always been apparently well and vigorous. Immediately after the accident he appeared to be in pain and gave indications that his back was bothering him. Within a few days he became acutely ill and vomited, he lost his appetite and was not as active as formerly. On December 15 purple spots were seen on his legs and marks on his back. His hands and feet were swollen. He was taken to a hospital for observation where he grew steadily worse. He died Dec. 27, 1930 while undergoing an operation "to relieve an accumulation of gas." It was found that he had a chronic inflammation of the gallbladder, and gallstones, of apparently long standing. The insured died, according to the report of the case of "a degeneration of the liver, causing purpura which appears to be a breaking down of the blood vessels resulting in hemorrhages throughout the body."

Apparently, the insurer was willing to pay the face value of the policies but unwilling to pay double indemnity, to which the beneficiary was entitled only in event of death by accident. The beneficiary under the policy therefore brought suit. Three of the physicians who testified as experts for the plaintiff gave it as their opinion that the degeneration of the liver that caused the death of the insured was due solely to the accident and that the chronic condition of the gallbladder neither caused nor contributed to the death. On the other hand, two physicians who testified as experts for the insurer were of the opinion that the degeneration of the liver was caused by infection from the diseased gallbladder. All the medical witnesses however admitted that purpura might be caused either by trauma or by infection. The question of fact, then, was whether the degeneration of the liver in this case was (1) caused solely by the accident or (2) caused in whole or in part by the diseased gallbladder. This issue was clearly submitted to the jury which found in favor of the plaintiff in effect finding that the fatal degeneration of the liver was caused solely by the accident. Thereupon the insurer appealed to the United States circuit court of appeals eighth circuit.

The insurer contended that, even if the accident was the sole cause of the degeneration of the liver, still the insurer was not liable for double indemnity, the degeneration of the liver was itself "a disease" and therefore the insured died "directly or indirectly from bodily infirmity or disease." The language of the policy, however, said the circuit court of appeals, cannot be regarded as excluding from double indemnity coverage a death that results from a disease that is itself directly and solely caused by an accident. After having promised double indemnity for accidental death, it would take clear and precise language to limit the coverage of the policy to only such a death as is caused by an accident which produces no condition recognized as a disease.

The insurer further contended that the only inference that could be drawn from the evidence was that the condition of the gallbladder of the insured either caused or contributed to his death. The mere fact that the insured had a disease at the time of the accident, said the circuit court of appeals, does not prevent a recovery for accidental death if the disease had no causal relation to the death. Whether death was caused solely by the accident or wholly by the diseased gallbladder, or partly by the accident and partly by the diseased gallbladder, was clearly for the jury to determine and the jury's finding is conclusive. The trial court correctly charged the jury.

If Mr. Still [the insured] sustained an accident but at the time it occurred he was suffering from a pre-existing disease or bodily infirmity and if the accident would not have caused his death if he had not been affected with the pre-existing disease or infirmity, but he died because the accident aggravated the effects of the pre-existing disease or bodily infirmity or because the pre-existing disease aggravated the effects of the accident then the defendant would not be liable under the double indemnity provision of the policies because in such a case the death would be caused partly by disease and partly by accident. But even if the death was caused by a disease which disease was not the result of any other bodily infirmity or disease in existence at the time of the accident but which disease was itself caused by the external violent and accidental means which produced the bodily injury the defendant would be liable to pay the double indemnity because in such case the disease was the effect of the accident.

A judgment in favor of the plaintiff, the beneficiary under the policies contested, to recover double indemnity, was affirmed—*Mutual Life Ins Co of New York v Still*, 78 Fed (2d) 748.

Society Proceedings

COMING MEETINGS

- Alabama Medical Association of the S. M. A. Apr 21 '37
Dr D. L. Cannon 319 Dexter Ave.
- American Association of Anatomists Apr 1
George W. Corner 260 Crittenden Boulevard Rochester N. Y.
- American Association of Pathologists and Bacteriologists Boston Apr 9-10
Dr Howard T. Karsner 2085 Adelbert Road Cleveland
- American College of Physicians Detroit Mar 26 Mr E. R. Loveland
133 South 36th Street Philadelphia Executive Secretary
- American Physiological Society Washington D. C. Mar 25-28 Dr A. C. Ivy 303 East Chicago Avenue Chicago Secretary
- American Society for Experimental Pathology Washington D. C. Mar 25-28 Dr Shields Warren 195 Pilgrim Road Boston Secretary
- American Society for Pharmacology and Experimental Therapeutics Washington D. C. Mar 25-28 Dr E. M. K. Geiling 710 North Washington Street Baltimore Secretary
- American Society of Biological Chemistry Washington D. C. Mar 25-28 Dr H. A. Matill Chemistry Bldg State University of Iowa Iowa City Secretary
- Arizona State Medical Association Nogales Apr 23-25 Dr D. F. Harbridge 15 East Monroe Street Phoenix Secretary
- Federation of American Societies for Experimental Biology Washington D. C. Mar 25-28 Dr E. M. K. Geiling 710 North Washington Street Baltimore Secretary
- Georgia Medical Association of Savannah Apr 21-24 Dr Edgar D. Shanks 478 Peachtree Street N. E. Atlanta Secretary
- Missouri State Medical Association Columbia Apr 13-15 Dr E. J. Goodwin 634 North Grand Blvd. St. Louis Secretary
- National Tuberculosis Association New Orleans Apr 22-25 Dr Charles J. Hatfield 7th and Lombard Streets Philadelphia Secretary
- Nebraska State Medical Association Lincoln Apr 29 Dr R. B. Adams 15 N. Street Lincoln Secretary
- Oklahoma State Medical Association Enid Apr 6-8 Dr L. S. Willour 203 Ainsworth Building McAlester Secretary
- South Carolina Medical Association Greenville Apr 21-23 Dr E. A. Hines Seneca Secretary
- Southeastern Surgical Congress New Orleans March 9-11 Dr Benjamin T. Beasley 478 Peachtree Street N. E. Atlanta Ga Secretary
- Tennessee State Medical Association Memphis Apr 14-16 Dr H. H. Shoulders 706 Church Street Nashville Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

25 721 968 (Dec.) 1935

- Observations on Administration of Large Doses of Calcium in Metastatic Carcinoma in Bone. A. Brunschwig. Chicago—p. 721.
- Vysarcinoma of Diaphragm. Report of Two Cases. J. D. Kirshbaum. Chicago—p. 730.
- *Sternoclavicular Branchioma. B. M. Fried. New York—p. 738.
- Tumor of Adrenal Gland Composed of Elements of Bone Marrow Tissue. J. C. Richardson. Toronto—p. 746.
- Comparative Studies on Carcinogenesis in Rats. A. F. Watson. London, England—p. 753.
- Two Tumors of Soft Tissues Resembling Tumors of Bone. S. A. Jacobson. New York—p. 763.
- Schuller-Christian's Disease Under Observation for Nine Years. W. A. Hanson, L. H. Fowler, and E. T. Bell. Minneapolis—p. 768.
- *Comparative Cytologic Study of Benign and Malignant Tissues. H. K. Fidler. Winnipeg, Manit.—p. 772.
- Chemistry of Cell Division. V. Influence of Ascorbic Acid, Glutathione, and Cysteine on Activity of Tumor Nuclease. Mary E. Maver and C. Voegtlin. Washington, D. C.—p. 780.
- Effect of Sodium Formaldehydesulfoxylate on Rat Sarcoma. J. C. Krantz, Jr., Ruth Musser, C. J. Carr, and W. G. Harne. Baltimore—p. 789.
- Differences Observed in Tumor Incidence of Albino Strain of Mice Following Change in Diet. J. J. Buttner. Bar Harbor, Maine—p. 791.
- Possible Effect of Oil of Gaultheria in Diet of Mice Susceptible to Spontaneous Carcinoma of Breast. III. Survival Time. L. C. Strong. New Haven, Conn.—p. 797.
- Nuclear Nucleolar Volume Ratio in Cancer. P. H. Guttman. Sacramento, Calif., and S. Halpern. Denver—p. 802.
- Effect of Methylcholanthrene on Developmental Growth of *Obelia Gemiculata*. F. S. Hammett and S. P. Reimann. Philadelphia—p. 807.
- Proliferation Retarding Effect of Cystine Disulfide. T. F. Lavine. North Truro, Mass.—p. 809.
- Cancer in Java and Sumatra. C. Bonne. Batavia, Java, Netherlands East Indies—p. 811.

Large Doses of Calcium in Metastatic Carcinoma in Bone.—Brunschwig cites two cases of metastatic carcinoma to bone from the breast (diagnosed roentgenologically) in which intensive calcium therapy was the apparent cause of a temporary sclerosis of the skeleton, with partial or almost complete filling in of many of the osteolytic lesions by bone. The severe pain accompanying these lesions was greatly relieved for long periods. No opiates or other analgesics were administered during the periods of symptomatic improvement. In one case there was a return to normal physical activity for one and one half years. No roentgen therapy was administered to these patients during or prior to the periods in which temporary sclerosis of the skeleton occurred. In five other patients exhibiting osteolytic metastases from carcinomas of the breast, intensive calcium therapy, while affording in three instances some degree of amelioration of pain, failed after three, four and six months respectively to produce roentgenologic evidence of changes in the normal or involved portions of the skeleton. The fact that only two of seven cases responded to calcium therapy by showing roentgenologic evidence of osteosclerosis in the lesions and uninvolved bones is unexplained. The various factors that affect calcium balance were not taken into consideration during the periods of observation. Perhaps adjustment of these factors preliminary to and concurrently with intensive calcium therapy would have altered the incidence of sclerosis of the skeleton. The diagnosis of metastatic carcinoma to bone in these cases is only roentgenologic but in the author's opinion no other condition under the circumstances could have caused the changes seen in the initial roentgenograms. No postmortem studies are available at this time.

Sternoclavicular Branchioma.—Fried presents two cases which showed a unilateral neuritis of the brachial plexus, a homolateral Horner's syndrome and an atrophic monoplegia of the corresponding arm. Roentgen examination of the affected side showed a dense shadow confined to the region of the first

three ribs. The entire clinical course of the malady was dominated not so much by the malignant disease as by the proximity of the tumor to the brachial plexus, on which it had encroached. Postmortem examination revealed a squamous epithelial cancer originating in the region of the left sternoclavicular articulation, ultimately invading the infraclavicular and supraclavicular fossae, the clavicle and the upper three ribs. The pleura, the lungs and other viscera were free from tumor. The probable origin of the tumors from epithelial rests of the lower cleft of the branchial apparatus is discussed, and in accordance with their origin they are designated as "sternoclavicular branchiomas." Early recognition of the tumors is emphasized.

Cytologic Study of Benign and Malignant Tissues.—Fidler reviews the grounds on which the cytologic in contradistinction to the histologic diagnosis of malignant conditions may be made and presents evidence obtained from a study of 150 benign malignant tissues. He used the technic of Dudgeon and Patrick, who stress the importance of preparing the film immediately after the tissue is removed from the body. This, in the author's experience, is not necessary. Equally satisfactory smears can be prepared from tissues kept in water or saline solution for four hours. The smear, however, should be made from a freshly cut surface. The cut surface of a benign tissue when scraped with a sharp knife usually yields few cells. Those that do come away are characteristically in sheets or clumps, thus making a very irregular smear both grossly and microscopically. The cells are usually no more than one layer in thickness and have a flagstone or pavement arrangement. The cytoplasm stains pink and has a regular outline. The size and shape of the cell and nucleus are very regular. The smallest nucleus is never less than half the size of the largest, and usually the variation in nuclear size does not exceed 3/4. The fibrin network and chromatin material are fine and delicate. The nucleolus may be single or multiple, but its total area is small in comparison to the nucleus. It is round or oval and regular in size and shape. A typical malignant tissue presents an entirely different picture. The cells have no regular arrangement, and the pavement structure is never seen. Normal cells are adherent one to another because of the presence of a cement substance between the individual units. The absence of this adhesive quality is a striking feature of malignant cells. The cells are irregular in size and shape, and frequently the cellular outline is broken. The cytoplasm tends to stain more darkly than in benign cells and may contain inclusions of leukocytes, red blood cells and other protein debris. In making a diagnosis, the examination of the nucleus and its constituents is probably of the greatest importance, for, while the cytoplasm may be broken or even so completely disrupted as to render the nucleus naked, the nuclear membrane affords sufficient protection so that the outline and contents are undamaged. The nucleus is characterized by coarseness of all its elements. There is no regularity in its situation in the cell, but it is usually eccentrically placed. It is larger than usual and varies greatly in size and shape. The nuclear chromatin stains more deeply and may be found in large granules. The presence of multinucleated giant cells is the rule rather than the exception. The nucleolus is very large, single or multiple, and frequently has an irregular outline. It stains a pale red or violet and is sometimes surrounded by a clear halo, which forms a striking contrast. The author concludes that the results of his work seem to corroborate the contention of MacCarty, Dudgeon and Heiberg that the malignant cell is a morphologic entity and can be recognized in suitable preparations.

American Journal of Ophthalmology, St. Louis

19 192 (Jan.) 1936

- Carbohydrate Matrix of Epithelial Cell Inclusion in Trachoma. C. F. Rice. Rolla, Mo.—p. 1.
- Sympathetic Ophthalmia. Part I. A. C. Woods. Baltimore—p. 9.
- Bullous Keratitis. Rational Therapy. J. Green. St. Louis—p. 16.
- Surgery of Glaucoma. Mode of Action of Cycloidalysis. O. Barkan. S. F. Boyle and S. Maister. San Francisco—p. 21.
- Kayser Fleischer Ring in Wilson's Disease and Microcephaly. L. Bothman and D. E. Rolf. Chicago—p. 26.
- Subjective Studies of Blind Spot and Visual Fields. E. Jackson. Denver—p. 34.
- Effects of Mydriatics on Intra Ocular Tension. H. S. Gradle. Chicago—p. 37.
- Magnet Extraction of Intra Ocular Foreign Bodies. Important Points in Technique. A. W. Morse. Butte, Mont.—p. 40.

American Journal of Public Health, New York

26 194 (Jan) 1936

- Epidemiology of Malaria in the Philippines P F Russell New York —p 1
- *Progress Report on Pertussis Immunization Pearl Kendrick and Grace Eldering Grand Rapids Mich —p 8
- The Health Conservation Contest Why a Rural Contest? W S Rankin Charlotte N C —p 13
- Id Getting Financial Aid T J McCamant El Paso Texas —p 17
- Id School Medical Services Davidson County Tenn J J Lentz Nashville Tenn —p 20
- Id Rural Tuberculosis, a Special Problem R M Atwater Olean N Y —p 23
- Leprosy in the Philippine Islands G C Dunham Manila Philippine Islands —p 27
- How Tuberculosis Spreads in a Rural Community Jean Downes New York —p 30
- Sanitary Significance of Succession of Coli Aerogenes Organisms in Fresh and in Stored Feces L W Parr Washington D C —p 39
- Parasites of Animals and Public Health in North America T W M Cameron Montreal —p 46
- Monkey Test for Chills Producing Activity of Concentrated Antipneumococcus Serum L A Barnes and E S Robinson Boston —p 51
- Precision in Choice of Health Education Methods W P Shepard and A Arfsten, San Francisco —p 54

Pertussis Immunization—Kendrick and Eldering made a progress report on a pertussis immunization study in Grand Rapids, Mich. The series to date includes 1,592 children—712 in the test group and 880 in the control group. In the whole series there have been sixty-seven cases of whooping cough, of which sixty-three occurred among the controls. The data presented suggest that an active immunity has followed the injection of *Bacillus pertussis* vaccine under the conditions described. However, before a proper evaluation can be made of the data or definite conclusions drawn it will be necessary to increase the number of subjects in the study and to await the accumulation of follow-up data over a longer period of time.

American Journal of Surgery, New York

30 397 578 (Dec) 1935

- Location and Preservation of Parathyroid Glands J W Hinton New York —p 400
- Technic of Adrenalectomy and Adrenal Denervation J L De Courcy Cincinnati —p 404
- Ununited Fractures of Neck of Femur Treatment by Bifurcation Operation W I Gailand New York —p 410
- Internal Fixation in Fractures of Hip (Martin Method) W R Brewster New Orleans —p 420
- Subtalar Dislocation of the Foot Report of Two Cases D C Straus, Chicago —p 427
- *Pelvic Pain in Women Treatment by Resection of Superior Hypogastric Plexus Report on Thirty Nine Cases E A Kindel Cincinnati —p 435
- Physiologic Consideration and Hospital Management of Bleeding in Late Pregnancy E G Waters Jersey City N J —p 444
- Placental Attachment and Separation as Influenced by Vacuum Action Equilibrating Force and Retroplacental Blood L Drosin New York —p 450
- Variations in Gross Anatomy of Stellate and Lumbar Sympathetic Ganglions S Perlow and K L Vehe Chicago —p 454
- Primary Thrombosis of Axillary Vein B V McClanahan Galesburg Ill —p 459
- Acute Epididymitis Report of Sixty Five Cases Treated with Modified Bellevue Adhesive Suspensory J P Robertson and A B Lee Birmingham Ala —p 462
- Multiple Urograms Their Advantage in Urologic Diagnosis J S Lewis Jr Youngstown Ohio —p 469
- Traumatic Appendicitis U Maes with Elizabeth M McFetridge New Orleans —p 478
- Appendicitis in Puerto Rico Observations Based on Critical Analysis of Two Hundred and Forty Four Cases W R Galbreath and F G Irwin San Juan, Puerto Rico —p 483
- Surgical Treatment of Peptic Ulcerations (Billroth I Method) M E Steinberg Portland Ore —p 490
- Congenital Duodenal Obstruction from Anomalous Mesenteric Vessels E P Buchanan Pittsburgh —p 499
- Complete Rectal Occlusion Necessitating Colostomy Due to Carcinoma of Prostate J A Lazarus New York —p 502
- Inguinal Hernia of Bladder A Bierhoff and A S Unger New York —p 506
- *Use of Nupercaine Ointment in Eye for Relief of Pain Resulting from Trauma W C Minnich Philadelphia —p 508
- Value of Surgery and X Ray Treatment in Carcinoma of Breast R T Pettit Ottawa Ill —p 510
- Study of Cancer Recent Advances of Clinical Significance J J Stein Cincinnati —p 515

Pelvic Pain in Women—Kindel believes that the hypogastric plexus carries the important pathways of sensation from the internal genital organs to the medullary centers and that section of the superior hypogastric plexus is a safe, simple and

efficacious way of interrupting these pathways. He believes that resection of the superior hypogastric plexus has a definite place in gynecologic surgery but should be employed in carefully selected cases. It is not to be used as an immediate procedure in all cases of plexalgia, particularly in adolescent girls, whose first few periods may be irregular and painful. In many instances this pain disappears in a few years and especially after a pregnancy. He feels certain that failure to recognize this type of pelvic pain (plexalgia) accounts for some of the poor results in gynecologic surgery. This is evident in the fact that one fourth of his patients had been operated on previously.

Use of Nupercaine Ointment in the Eye—Minnich used the commercial nupercaine ointment, which contains 1 per cent of the anesthetic base in hydrous wool fat and petrolatum, for the relief of pain from trauma to the eye in 105 cases. The results from the outset were most gratifying. Within three to five minutes following application of the ointment to an injured eye, there was usually entire relief from pain, relief which persisted more or less completely for twenty-four hours in the majority of instances. When necessary the eye is cleansed with some mild antiseptic douche, any foreign body is removed and then a small amount of the ointment is applied to the injured eye. In no case is the patient supplied with the ointment for use at home, but he is instructed to report the following day. In a large proportion of the cases a single application of the ointment was required, in others, two or more were necessary. In one patient, seen some time after severe burns of the cornea with wet cement and at the time of first examination presenting, as the result of neglect, a well defined corneal ulceration, the ointment not only relieved the discomfort but its daily application for sixteen successive times was followed by progressive improvement in the ocular condition. In none of the 105 cases was there the least indication of an injurious effect from the ointment on the cornea, and all patients continued to work at their usual occupations.

American Review of Tuberculosis, New York

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- *Pulmonary Rest by Posture P H Pierson and R R Newell San Francisco —p 1
- Interrelationships of Tuberculosis Syphilis and Antisyphilitic Treatment P Padgett and J E Moore Baltimore —p 10
- *Problem of Coexisting Syphilis and Tuberculosis in Light of Current Opinion and Practice C St C Guild and Marion Nelson New York —p 31
- First Steps in Pneumolysis C H Andrews, Prince Albert, Sa —p 36
- Results in Intrapleural Pneumolysis L S Peters and P G Cornish Albuquerque N M —p 44
- Fibrin Bodies in Pleural Space in a Case of Artificial Pneumothorax with Necropsy W A Zavod Valhalla N Y —p 48
- Primary Tuberculosis Observations Among Tuberculosis Contacts M H Jorres Boston —p 55
- Bilateral Apical Nontuberculous Bronchiectasis Report of Case J Steidl and F H Heise Trudeau N Y —p 61
- Leukocytic Blood Picture in Active and Inactive Tuberculosis Comparison of Differential Blood Counts Made During Clinical Activity with Others Made After Clinical Arrest W H Morris and G C Wilson Wallingford Conn —p 66
- Infraglottic Perforating Tuberculous Ulcer of Larynx F I Putnam Tucson, Ariz —p 75
- Statistical Study of Results of Group Tuberculin Testing with MA 100 Final Report of the National Tuberculosis Association Jessamine S Whitney and Isabel McCaffrey —p 78
- Saprophytic Acid Fast Bacilli from Ureteral Specimens A H Wells Kansas City Mo —p 91
- Spontaneous Pneumothorax (Rupture of Lung) with Abdominal Symptoms in Course of Artificial Pneumothorax Report of Two Cases M H Jorres Boston —p 98
- *Tannin Treatment in Tuberculosis Preliminary Report S Loumos and S H Rosenblum Chicago —p 101

Pulmonary Rest by Posture—In questioning patients with pulmonary tuberculosis, Pierson and Newell found that some had no preference as to position and that many preferred to lie on the side of their good lung. Animal and clinical investigation revealed that the mediastinum falls toward the down side according to its flexibility. The (essentially hydrostatic) pressure of the abdominal viscera pushes the diaphragm cephalad on the down side but exerts practically no pressure cephalad on the up side (average 15 cm water pressure greater on the down side than on the up side). The increased motion of the diaphragm on the down side is aided by the fact that a muscle

under tension reacts more actively, inspiration being a thrust against the pressure of the abdominal contents. Quiet expiration is a passive motion. On the up side it is done by the elastic recoil of the lung, which diminishes as the lung contracts. On the down side it is done mostly by the subdiaphragmatic pressure of the abdominal contents, a force which continues practically undiminished no matter how far cephalad the diaphragm moves. To say that if a patient lies on one or the other side he automatically rests or splints the down lung is not borne out by these observations, and the reverse seems to be the fact. If rest of a lung is desired it may be obtained by paralyzing the phrenic nerve and having the patient lie on that side. The authors state that if their experiments with dogs are sound it is evident that there is not only more motion in the down lung but also more tidal air moved by that side.

Coexisting Syphilis and Tuberculosis—Guild and Nelson collected data on 20,281 tuberculosis patients (17,348 white, 2,933 Negro) on whom routine blood tests were made. Of these, 41 per cent of the white and 21 per cent of the Negro patients gave a positive Wassermann and Kahn reaction. Institutions that make a blood test only because of some special indication or at the request of the patient miss three out of every four cases of syphilis (syphilitic infection). Since the incidence of syphilis in this group is not significantly higher than one would expect to find in similar racial and age groups in the general population, the evidence suggests that syphilis does not predispose to tuberculosis. One third of all tuberculosis patients who have syphilis receive no antisyphilitic treatment whatever. While in most sanatoriums both the arsenicals and the heavy metals are used in the treatment of syphilis, a few use nothing but the arsenicals and others nothing but the heavy metals. Only in the use of neoarsphenamine was it possible to indicate the divergence of opinion as to the proper dosage. Here the authors found ten institutions using a fractional dose, sixteen a dose of average size, and one an amount considered high for routine administration even in a nontuberculous patient. It seems reasonable to expect that a study of a large number of case records will confirm or disprove Chadwick's opinion that syphilis lowers a patient's resistance to tuberculosis or that careful observation of a large series of cases would finally answer the question as to whether or not the coexisting syphilis should be treated. If so, the next step would be to determine the drug or drugs of choice under different circumstances and their optimal dosages.

Tannin Treatment in Tuberculosis—Loumos and Rosenblum used sodium tannate hypodermically in a solution of 0.5 per cent on alternate days in the intrascapular region in twenty unselected cases of tuberculosis, nineteen pulmonary and one lymphatic. The patients have taken tannin for from two and a half to five months so far. The treatment failed to show any benefit in six cases. These cases were progressive and probably in some of them the medication activated the process. In these cases the treatment was discontinued in the fourth or sixth week. In the other thirteen cases, six presented cavities and seven showed infiltration. Nine showed definite improvement clinically, progressive increase of weight, less expectoration, increase of appetite and strength and less pronounced rales. In the other four, while there was no increase in weight, the general condition improved as well as the appetite and strength, and the pulmonary signs became less pronounced. Roentgenologically seven improved definitely. Of these thirteen cases, three were slow, progressive, febrile cases; the fever in one disappeared after four months of treatment and in the other two became lowered. Four patients were improving slowly before the treatment but after that they improved rapidly. Six cases were stationary for several months and started to improve after the treatment. A 1 per cent solution was tried in the cases that failed to improve but without result. The medication was entirely harmless, as there were no reactions. In the case of bilateral cervical lymphadenitis an increase of the discharge was observed in the beginning of treatment followed by a lessening and finally disappearance after twenty injections. 1 cc. of the solution had been given on alternate days. At the same time in the enlarged lymph nodes without suppuration rapid swelling and suppuration were observed. Because of this reaction the injections were discontinued and

the sodium tannate was given by mouth with iodine. The amount given was 0.15 Gm of sodium tannate and 0.1 Gm of iodine daily, made in the form of a syrup. In this way reactions were avoided.

Annals of Surgery, Philadelphia

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- Primary Carcinoma of Lung or Bronchus E A Graham St Louis —p 1
- Surgical Risk with Especial Reference to Cardiovascular System J S Rodman and W G Leaman Philadelphia —p 15
- Renal Phase of Surgical Risk L G Rowntree Philadelphia —p 24
- Pantocain in Spinal Anesthesia D C Bull and C B Esselstyn New York —p 29
- *Carbon Dioxide Absorption Technic in Anesthesia R M Waters Madison Wis —p 38
- Praeesthesia Narcosis with Paraldehyde J Henderson New York —p 46
- Simple Dermoid Cysts of Breast J G Menville Rochester Minn —p 49
- Tuberculosis of Breast L Berger and H Mandelbaum Brooklyn —p 57
- Acute Cholecystitis Associated with Pancreatic Reflux R Colp I C Gerber and H Doubilet New York —p 67
- Surgery of Gallbladder and Biliary Tract F Glenn New York —p 77
- Appendicitis Analysis of Forty Eight Hundred and Thirty Three Cases L L Hobler Elmira N Y —p 86
- *Spina Bifida Treatment and Analysis of Eighty Four Cases I E Siris Brooklyn —p 97

Carbon Dioxide Absorption Technic in Anesthesia—Waters has observed more than 15,000 administrations with the completely closed or carbon dioxide absorption technic. It has been found pleasant and convenient from the standpoint of the anesthetist, the patient and the surgeon. The hospital management has found it economical. In 73.8 per cent of these cases the various agents were administered by the carbon dioxide absorption technic. The total mortality was 3.7 per cent due to respiratory (0.6), circulatory (0.9), anesthetic (0.05) and other (2.1) causes. The acquisition of a mastery of anesthesia in art and in practice, with a thorough appreciation of the underlying physiology and pharmacology, involves for the average medical graduate an intensive training of not less than three years. The knowledge and skill of the individual who administers an anesthetic drug is far more important than is the agent which he administers or the technic by which he administers it. A patient suffering from an injury to the brain enters the average hospital once in twenty days, whereas twenty patients in the average hospital have the brain and many other organs injured every day with anesthesia. The author does not mean to give the impression that the chemical absorption of carbon dioxide from anesthetic mixtures will revolutionize anesthesia but that only "the quality of the physician's care and skill" will do that.

Spina Bifida—Siris gives an analysis of eighty-four cases of spina bifida; forty-seven patients were not operated on. Of those not operated on, all but one had died within twenty-four hours to one year after admission to the hospital. Of the thirty-seven patients operated on there was a hospital mortality of 32.3 per cent and those who survived the operation have been followed for periods of from two months to ten years. Successful surgical intervention is dependent on the condition of the coverings of the protrusion, the contents of the dura and the extent of involvement of the nerve cord and brain tissue if present, the extent of the defect in the bony structure, and the degree of hydrocephalus and other congenital deformities and anomalies. The prognosis in infants who are suitable for operation is best when the operation is performed as soon after birth as the general condition permits, before unavoidable pressure produces ulceration and impending rupture with leakage of cerebrospinal fluid and ascending meningitis, marasmus or some intercurrent disease to which they are susceptible. The possibility that hydrocephalus may follow operative correction of a spina bifida should not cause one to defer intervention in a suitable case. Of the thirty-two children whose sacs were amputated hydrocephalus increased in seven of the eight children in whom it was previously present and it was precipitated in but four of the children in whom there was no previous evidence of hydrocephalus. Hydrocephalus was not increased in a child in whom the sac was preserved and it was not precipitated in four other children in whom the dura and arachnoid were retained. The preservation of the dural sac as advocated by Penfield and Cone

is recommended as the operative procedure of choice. The presence of a spinal or occipital herniation which is thin, tense and then ruptures and alternately closes and ulcerates with a discharge of cerebrospinal fluid, complicated by a slowly progressive hydrocephalus, does not in all cases contraindicate surgical intervention, as the results of some of the operations are gratifying.

Archives of Dermatology and Syphilology, Chicago

33 1 208 (Jan) 1936

- Neoplastic Disease of Reticulo Endothelial System J. F. Fraser and H. J. Schwartz New York—p. 1
- *Leprosy Associated with Dermatitis Atrophicans Diffusa et Progressiva V. Pardo Castello Havana Cuba—p. 12
- *Maggot Therapy in Dermatologic Practice Report of Case of Chronic Ulcerating Granuloma of Undetermined Etiology in Which Maggot Therapy Was Used S. Ayres Jr. N. P. Anderson and G. M. Taylor Los Angeles—p. 21
- *Coccidioidal Granuloma Comparison of the North and South American Diseases with Especial Reference to Paracoccidioides Brasiliensis J. W. Jordan and F. D. Weidman Philadelphia—p. 31
- Histologic Evidence of Epithelioma of the Skin D. L. Sateinstein New York—p. 48
- Avian Itch Mites as Cause of Human Dermatoses Canary Birds Mites Responsible for Two Groups of Cases in New York M. B. Sulzberger and I. Kaminstein New York—p. 60
- Mixed Tumor of Palate Report of Case J. R. Drive Cleveland—p. 73
- Localized (Lichen) Amyloidosis of the Skin Report of Two Cases with Vital Staining of Amyloid Nodules by Congo Red Injected Intracutaneously or Subcutaneously R. Nomland Chicago—p. 85
- Dermatitis Nodularis Necrotica Report of Case with Autopsy Observations W. W. Duemling Fort Wayne Ind.—p. 99
- Generalized Lentigo Its Relation to Systemic Nonelevated Nevus E. P. Zeisler and S. W. Becker Chicago—p. 109

Leprosy Associated with Diffuse and Progressive Atrophic Dermatitis—Pardo-Castello reports a case of diffuse and progressive cutaneous atrophy apparently due to leprosy. The unusual features were the universality of the atrophy, which affected practically the whole cutaneous surface except the palms and soles, the absence of other manifestations of leprosy and, finally, the awakening of the infection and the development of an acute attack of the disease following intramuscular injections of chaulmoogra oil. The clinical aspect as well as many features of the histologic picture were similar to, if not identical with those in the cases of chronic atrophic dermatitis reported in the literature. The only definite characteristics in the present case were the great number of vacuolated or foamy histiocytes in the cellular infiltrate and the appearance of lepra cells of Virchow and the presence of Hansen's bacilli in the lymph during the terminal acute outbreak.

Maggot Therapy in Dermatologic Practice—Ayres and his associates discuss the case of a chronic ulcerating granuloma of 1 year's duration, in which the introduction of maggot therapy for eight weeks was followed by complete healing in another eight weeks. The result suggests the applicability of maggot therapy to other types of dermatologic conditions involving chronic ulcerative or granulomatous processes such as amebic ulceration of the skin, coccidioidal granuloma and spreading ulcerative and gangrenous infections of the abdominal wall, which occasionally follow appendectomy. There is psychic resistance to be overcome in instituting this type of therapy.

Coccidioidal Granuloma—Jordan and Weidman are of the opinion that *Coccidioides immitis* is firmly established as the cause of most if not all, cases of North American coccidioidal granuloma as at present recorded. It also caused two cases in Argentina. A radically different fungus *Paracoccidioides brasiliensis* is the cause of numerous cases in Brazil of a disease which heretofore also has been regarded as coccidioidal granuloma. The authors secured two strains of the latter fungus and compared them with two North American strains of *Coccidioides immitis*. They proved to be radically different in culture tubes and under the microscope and as to pathogenicity for laboratory animals. Only in tissue was there any resemblance between the two parasites, yet even there certain differences could be established. They believe that *Paracoccidioides brasiliensis* constitutes a new species. In view of the widely differing character of the diseases produced by the two species, it is doubtful whether the disease produced by *Paracoccidioides brasiliensis* should be included in the category of

coccidioidal granuloma. It is recommended that the name "Almeida's disease" be applied to the maladies caused by *Paracoccidioides brasiliensis*. Previously reported knowledge of North American cases of coccidioidal granuloma should be reexamined in the full light of Almeida's disease. *Paracoccidioidal granuloma* is a third fungous disease that must be added to blastomycosis and coccidioidal granuloma when the problem arises of differentially diagnosing blastomycosis from coccidioidal granuloma either clinically or histologically.

Archives of Ophthalmology, Chicago

15 1 162 (Jan) 1936

- Papilledema and Optic Neuritis A Retrospect L. Paton London, England—p. 1
- Nerve Supply to Orbicularis Muscle and Physiology of Movements of Upper Eyelid with Particular Reference to Pseudo-Graefe Phenomenon M. B. Bender New York—p. 21
- *Local Quinine Therapy for Some Diseases of Conjunctiva and Cornea E. Selinger Chicago—p. 31
- Transitory Choked Disk Report of Case with Eleven Year Follow Up Study E. Krinsky Brooklyn—p. 36
- The Aqueous Its Generation Functions and Circulation H. Smith Sidcup England—p. 40
- Effect of Bacterial Lysate on Staphylococcal Keratoconjunctivitis in Rabbits M. M. Strumia and H. W. Scarlett Philadelphia—p. 47
- Notes on Pathology and Surgical Treatment of Sympathetic Ophthalmia B. Samuels New York—p. 59
- Treatment of Iris Bombe by Iridectomy ab Externo Report of Cases W. D. Horner San Francisco—p. 70
- Biochemistry of Lens V. Cevitamic Acid Content of Blood and Urine of Subjects with Senile Cataract J. Bellows, Chicago—p. 78
- Reply to Criticisms of My Theory on the Genesis of Myopia G. Levinsohn Tel Aviv Palestine—p. 84
- Blood Lipids in Lipemia Retinalis A. Marble and Rachel M. Smith Boston—p. 86
- Intracapsular Extraction of Cataract in Average Practice Report of One Hundred Cases in Which Verhoeff's Method Was Used S. J. Beach and W. R. McAdams Portland Maine—p. 95
- Structure and Functions of Angle of Anterior Chamber and Schlemm's Canal O. Barkan, San Francisco—p. 101

Local Quinine Therapy for Some Eye Diseases—According to Selinger, quinine locally is a bactericide and astringent and is slightly anesthetic to mucous membranes. It possesses the property of penetrating through mucous membranes when applied locally, and by its action as a protoplasmic poison it causes the destruction of leukocytes, lymphocytes and other cellular elements. It also inhibits the invasion of the tissues by these cells. These well known pharmacologic properties explain the favorable therapeutic action of quinine bisulfate in cases of trachoma, interstitial keratitis, old corneal opacities and a few other diseases of the conjunctiva and cornea.

Arkansas Medical Society Journal, Fort Smith

32 119 136 (Jan) 1936

- *Role of Allergy in Arthritis W. T. Wootton Hot Springs National Park—p. 119
- Malaria in Arkansas W. B. Grayson G. Hastings H. V. Stewart and Mildred M. Moss Little Rock—p. 123

Rôle of Allergy in Arthritis—Wootton gives allergy the stellar role in the initial manifestation of arthritis. Practically all nonseptic disturbances of the joint begin as an allergic reaction, comparatively few as a trauma. The simple allergic joint, that is the acute gonorrheal, acute rheumatic fever, gouty and traumatized joints all show the same lack of pathologic and roentgenologic observations, only an edematous swelling is apparent. Chronic arthritis is the result of a dual process. Hyperparathyroidism is necessarily concomitant with the allergic or edematous process before any change may take place in the bone. The hormone from the parathyroids is the only known endocrine agent that may cause a hypercalcemia. In the event of a hypercalcemia occurring at a period when there is no synovial disturbance the calcium is taken up from the trabeculae, causing osteitis fibrosa cystica, Paget's disease and similar conditions. On the contrary, an atrophic arthritis results. Bacterial allergens from foci of infection predominate in the early life of the arthritic patient, and food proteins later. The two may be active at the same time. In the latter years kidney permeability to the excess of calcium, phosphorus and magnesium may bear a definite relation to a redeposit constituting the hypertrophic type of arthritis. The parathyroids are inaccessible and too little understood to bear tampering with by the inexperienced. A vast amount of research work remains to be done before this theory can be proved or disproved or

add greatly to the protective measures needed. As a basis for the study of arthritis, this theorem offers a plausible outline for a regimen that should both prevent and alleviate arthritis.

Colorado Medicine, Denver

33 172 (Jan.) 1936

- Diseases and Dysfunctions of the Thyroid Gland E P Sloan Bloomington Ill.—p 12
Elliott Treatment in Pelvic Inflammation and Dysmenorrhea L D Dickey Fort Collins—p 16
Causes of Death in Surgical Collapse of Lungs O S Levin Denver—p 20
*Treatment of Asthma with Ethylhydrocupreine W C Service, Colorado Springs—p 24

Treatment of Asthma with Ethylhydrocupreine—Service gave ethylhydrocupreine to sixteen patients, eleven of whom showed favorable results, while five were not benefited. Ethylhydrocupreine was used in doses of 4 grains (0.25 Gm). The patient is instructed to eat no breakfast and to take no medication by mouth during the morning. One capsule is taken at 8 a m and one at 10 a m. With each capsule, 8 ounces (240 cc) of milk is taken and as much more allowed as is desired. The noon and evening meals are taken as usual and any oral medication during the afternoon and evening. The next two mornings the same schedule is repeated. Then a rest of two days is given and the program is repeated. Following a second course, the treatment should be individualized. Some may be free from asthma and remain free. Others may remain free by taking one capsule each day for two or three days, and then following it with a period of rest. The object is to get the patient on as small a dosage as will keep him free. Most patients will remain free after two months of treatment, and then an occasional dose should be given if early signs of asthma appear. Patients who obtain relief with ethylhydrocupreine will notice first that the attacks do not occur in acute spasms, but that a gradual tightness of the chest develops. Expectoration is increased slightly and, instead of being difficult to raise, it is brought up easily and this usually serves to relieve a spasm of the chest. The relief from the terror of fighting for breath is marked in those patients who have spasmodic coughing attacks, because the mucus is raised without effort. The drug may be productive of toxic symptoms and should be discontinued in cases in which the patient complains of tinnitus, gastrointestinal distress or visual disturbances. Patch tests may give valuable information as to drug idiosyncrasy. The drug is not without danger, therefore each patient should be put on a minimal dosage.

Indiana State Medical Assn Journal, Indianapolis

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Organized Professional Anesthesia F T Romberger Lafayette—p 8
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Diagnosis and Treatment of Traumatic Lesions of Urinary System E Rupel, Indianapolis—p 20
Diabetes in Pregnancy H F Beckman Indianapolis—p 23

Iowa State Medical Society Journal, Des Moines

26 164 (Jan.) 1936

- Common Duct Injuries and Reconstruction J T Erdmann New York—p 1
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Coronary Thrombosis A G Felter Van Meter—p 14
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Id Report of Mild Case R D Stone Sully—p 16
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Present Status of Management of Petrositis F H Reuling Waterloo—p 20
Present Status of Management of Myopia J E Dvorak Sioux City—p 25
Operative Treatment of Female Sterility (Tubal Implantation) E von Raft Des Moines—p 31
Etiology and Pathology of Nontuberculous Pulmonary Diseases (Excluding Pneumonia) A C Starry Sioux City—p 3
X-Ray Findings in Nontuberculous Lung Diseases (Excluding Pneumonia) H W Dahl Des Moines—p 36
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Journal of Bone and Joint Surgery, Boston

18 1 262 (Jan.) 1936 Partial Index

- Experimental and Pathologic Studies in Degenerative Type of Arthritis W Bauer and G A Bennett Boston—p 1
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*Effect of Lumbar Sympathectomy on Growth of Legs Paralyzed by Anterior Poliomyelitis R I Harris and J L McDonald Toronto—p 35
Osteosynthesis in Spinal Tuberculosis J Calve and M Galland Berck Plage France—p 46
Arthrodesis of Hip for Coxalgia in Children A Richard Paris France—p 49
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*Treatment of Clubfoot L T Brown Boston—p 173
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Fractures and Dislocations About Shoulder R V Funsten and P Kinser University, Va—p 191
Old Traumatic Displacement of Distal Femoral Epiphysis Successful Open Reduction Followed by Epiphyseal Arrest of Normal Femur D H Levinthal, Chicago—p 199
Interesting Malignant Bone Tumors O C Hudson N H Robin and P A Robin Hempstead, N Y—p 215
Form of Balanced Traction Modification of Russell Traction A Mariani Brooklyn—p 234
Gout Unusual Manifestation in Stump W E Kendall H C Fortner and S K Livingston Hines Ill—p 240
Colon Bacillus Osteomyelitis M B Cooperman and G S Leventhal Philadelphia—p 242

Effect of Lumbar Sympathectomy on Growth of Paralyzed Legs—Harris and McDonald believe that prolonged increase in the blood supply to the lower extremity of a growing child can result in acceleration of the growth of the involved extremity. The increase in blood supply that follows lumbar sympathectomy is capable of inducing acceleration of the rate of growth. The shortness that follows paralysis of the lower extremity from poliomyelitis is due to the loss of accessory factors that normally enhance the basic growth rate of the epiphyseal line. The known factors are the contractions of normal muscles and the maintenance of a normal blood supply. Under appropriate circumstances, lumbar sympathectomy will diminish the shortness due to poliomyelitis. The factors favorable to a good result are paralysis limited to one lower extremity, paralysis moderate in degree, early operation (at the age of 6 years, if possible), use of ganglionectomy rather than ramisection, and maintenance of the increased vascularity that follows the operation.

Sacrarthrogenetic Telalgia—Pitkin and Pheasant base their study on an analysis of 506 examinations for low-back disability, chosen from a series of nearly 1,000 because of their completeness. Its scope is limited to a study of the pain caused by lesions of the sacro-iliac and sacrolumbar joints, and its purpose is to advance the following definition in the interest of more accurate anatomic nomenclature. "Sacrarthrogenetic telalgia" is in no sense a diagnosis but is a descriptive term that should be applied to the typical syndrome of pain originating in the sacro-iliac and sacrolumbar articulations and their accessory ligaments. The referred pain (telalgia) affects the gluteal or the sacral region, or both regions, and may affect any part or all parts of the lower extremities and genito-inguinal regions except the internal crural and plantar regions. The lesions that produce this type of pain are associated with lateral spinal scoliosis. They do not cause objective neuro-pathologic manifestations other than reflex physiopathic disorders and the atrophy of disuse. Sacrarthrogenetic telalgia is

not the result of irritation or compression of the trunks of peripheral nerves and must not be confused with radiculitis, neuritis or neuralgia. When caused by intra-articular ligaments, telalgia appears only in the intergluteal triangle. Pathologic changes in the tension of, or irritative stimuli applied to, the extra-articular ligaments of the upper sacral joints cause telalgia in the lower extremities. Telalgia that affects the lateral crural region originates in the posterior sacro-iliac and sacro-ischial ligaments. In presenting the results of their clinical and anatomic research, the authors have included only those observations which are related to the following sources of confusion in sciatica and low-back pain: (1) the inaccuracy of the nomenclature of referred pain, (2) the influence of inaccurate nomenclature on pathologic concepts, (3) the difference of opinion with regard to the localization of dermatomic areas, (4) the lack of specific descriptions of the innervation of the upper sacral joints and their ligaments, and (5) the vague descriptions of tenderness of various anatomic structures.

Treatment of Clubfoot—Brown has found that marked overcorrection of all the deformities of clubfoot can be obtained by the use of continuous slight traction by means of elastic bands. Since this method has been followed, it has not been necessary, in children up to the age of 5 years, to use forcible manipulations, ether, tenotomies, or stretching by frequently changed plaster casts or adhesive plaster.

Journal of Clinical Investigation, New York

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- Radiation of Heat from Human Body. V. Transmission of Infra Red Radiation Through Skin. J. D. Hardy and C. Muschenheim. New York—p. 1.
- Theobromine Sodium Salicylate as Vasodilator. Teresa McGovern. Ellen McDevitt and I. S. Wright. New York—p. 11.
- Studies of Hemolytic Streptococcal Infection. I. Factors Influencing Outcome of Erysipelas. C. S. Keefer and W. W. Spink. Boston—p. 17.
- Id. II. Serologic Reactions of Blood During Erysipelas. W. W. Spink and C. S. Keefer. Boston—p. 21.
- Circulation Rate in Relation to Metabolism in Thyroid and Pituitary States (Decholin Method). J. W. Macy, T. S. Claiborne and L. M. Hurxthal. Boston—p. 37.
- Observations on Adrenal Insufficiency. J. Stahl, D. W. Atchley and R. F. Loeb. New York—p. 41.
- Effects of Inhalation of Helium Mixed with Oxygen on Mechanics of Respiration. A. L. Barach with technical assistance of M. Eckman. New York—p. 47.
- *Nature of Peripheral Resistance in Arterial Hypertension with Especial Reference to Vasomotor System. M. Prinzmetal and C. Wilson. Boston—p. 63.
- Effect of Drugs in Production of Agranulocytosis with Particular Reference to Aminopyrine Hypersensitivity. W. Dameshek and A. Colmes. Boston—p. 85.
- Test for Abnormally Large Amounts of Parathyroid Hormone in Blood. B. Hamilton and W. J. Highman Jr. Chicago—p. 99.
- Plasma Lipids in Chronic Hemorrhagic Nephritis. I. H. Page, E. Kirk and D. D. Van Slyke. New York—p. 101.
- Plasma Lipids in Essential Hypertension. I. H. Page, E. Kirk and D. D. Van Slyke. New York—p. 109.
- *Changes Occurring in Macrophage System of Lungs in Pneumococcus Lobar Pneumonia. O. H. Robertson. Chicago and C. G. Uhley. Minneapolis—p. 115.
- Filtrable Serum Calcium in Late Pregnant and Parturient Women and in the New Born. Marie Andersch and F. W. Oberst. Iowa City—p. 131.
- Problem of Antidiuretic Substance in Blood of Patients with Eclampsia and Other Hypertensive Diseases with Observations on Spinal Fluid. G. Levitt. Chicago—p. 135.
- Liver Function as Tested by Lipemic Curve After Intravenous Fat Administration. A. Nachlas, G. L. Duff, H. C. Tidwell and L. E. Holt Jr. Baltimore—p. 143.

Peripheral Resistance in Arterial Hypertension—Prinzmetal and Wilson attempt to show whether the increased peripheral resistance is generalized throughout the systemic circulation or is confined to the splanchnic area, to what extent the vessels are responsible for the increased peripheral resistance, capable of dilatation, and what part is played by the vasomotor nerves in the maintenance of the increased peripheral resistance. *i. e.*, if arterial hypertonus is present, whether it can be attributed to an increase in sympathetic vasoconstrictor impulses. Determinations of resting blood flow in the arm in various types of hypertension (benign, malignant and secondary) give an average value no greater than that obtained from subjects with normal blood pressure. This indicates that increased vascular resistance in the different types of hypertension is not confined to the splanchnic area but is generalized throughout

the systemic circulation. Patients with hypertension show increase in blood flow in response to heat and reactive hyperemia equal in degree to that produced in normal individuals, showing that the blood vessels in hypertension are capable of considerable dilatation and indicating that the increased peripheral resistance is due to hypertonus and not to organic changes in the vessel walls. Sympathetic vasodilatation produced by the "heat test" produces no greater increase in blood flow in subjects with high blood pressure than in normal individuals, suggesting that the vascular hypertonus is not vasomotor in origin. Patients with coarctation of the aorta, on the other hand, show a greater increase in blood flow in the arm in response to the heat test than controls or patients with generalized hypertension. This demonstrates that vasoconstriction of sympathetic origin is present in the upper extremities in coarctation of the aorta and affords confirmatory indirect evidence that the hypertonus in generalized hypertension is not of vasomotor origin. Anesthetization with procaine hydrochloride of the vasomotor nerves to the arm produces the same increase in flow in normal subjects and patients with hypertension, proving that the vascular hypertonus is independent of the vasomotor nerves and that this hypertonus must therefore be regarded as intrinsic spasm of the blood vessels themselves. Acute exacerbation of hypertension with change from the benign to the malignant type has been observed in one case. Such exacerbation is apparently not due to increased vasomotor activity but must be attributed to an increase in the intrinsic vascular hypertonus. These conclusions apply to all types of hypertension and, hence there is no physiologic evidence for the separation into "organic" and "functional" types or for the assumption that renal hypertension is due to vasomotor hypertonus. In blood vessels of the arm greater variations in blood flow are produced by vasodilator than by vasoconstrictor impulses. It appears that normal vasomotor activity is superimposed on the intrinsic vascular hypertonus. Surgical procedures aiming at the relief of high blood pressure by sympathectomy do not abolish the vascular hypertonus that is fundamentally responsible for the hypertension.

Macrophage System of Lungs in Pneumonia—Robertson and Uhley made a histologic study of postmortem tissues obtained from forty cases of lobar pneumonia representing more than ninety separate lesions of the lobe of approximately known age, with the purpose of ascertaining whether or not the macrophages play as conspicuous a part in the later stages of the human pathologic process as was observed in the lesion of experimental lobar pneumonia in the dog. It was found that resolution of the consolidated lung was regularly accompanied by characteristic changes in the lung parenchyma and cellular exudate analogous to those occurring in the dog's lung at the time of recovery. The evolution of the whole process could be followed often in a single case when lesions of different ages were present. The first evidence of the reaction consists of an increase in the number of large mononuclear cells in the alveolar walls, many of which protrude into the air spaces. This results in a thickening of the septums. As the process develops, the large mononuclear cells become detached from the alveolar wall and enter the exudate where they exhibit the form and phagocytic functions of the macrophages. These cells gradually replace the polymorphonuclears, the fibrin disappears progressively, and the lesion assumes the characteristic appearance of resolution. The same type of tissue cell reaction was observed in the lymph nodes at the hilus of the lung. Sections obtained from six patients dying at intervals of from six days to two months following recovery from lobar pneumonia showed a pronounced macrophage reaction in every instance. Whenever a well developed macrophage reaction occurred, pneumococci were observed to be few in number or absent while micro-organisms were abundant in the majority of lesions of all ages in which the exudate was composed predominantly of polymorphonuclear leukocytes. Such marked differences in numbers of pneumococci were observed not only between lobar lesions but also at times in different parts of the same lesion in which areas of focal macrophage reaction were occurring. The macrophages were seen to be actively phagocytic and gave evidence of effective digestion of engulfed pneumococci. These data suggest that mobilization of the macrophages represents an immune response of the pulmonary tissue cells.

Journal of General Physiology, New York

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- Bladder Displacement Secondary to Suppurative Arthritis of Hip and
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- *New Method of Closing Suprapubic Bladder Incisions with Remarks
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Method of Closing Suprapubic Bladder Incisions—To shorten the period of disability and assure better healing Davis diverted the urinary drainage entirely away from the operative incision in the abdominal wall and allowed the incision to heal by primary intention. The technic involved was a modification of the Pfannenstiel incision as adapted to bladder operations by MacGowan, Legueu and Kelly. The incision is made in the usual way except that it lies 4 or 4.5 cm above the upper border of the symphysis. A mushroom drain is sutured into the bladder. The bladder is then protected by a finger in the prevesical space, and a stab wound is made from the outside through the middle of each rectus muscle and half way between the incision and the symphysis. A large curved clamp is passed through this stab wound. With it the drainage tube, a Dakin tube and a cigaret drain are drawn out together through the stab. The cigaret drain and the Dakin tube are then arranged so that they lie properly in the prevesical space, and the Dakin tube is tied to the drainage tube on a level with the skin. The incision is closed tightly in layers. The suturing of the recti closes the incision off completely from the prevesical space. The cigaret drain should not be constricted. It is withdrawn as usual on the second or third day while the Dakin tube remains in place from five to seven days, so that if any signs of infection in the prevesical space appear treatment with dilute solution of sodium hypochlorite can be begun at once. If this is necessary, it must be vigorous. Injections should be made every one or two hours day and night. If there is any evidence of alkaline infection dilute acetic acid of a strength sufficient to neutralize the wound should be used until the ammoniacal odor disappears and then hypochlorite solution substituted. The sinuses produced tend to contract rapidly probably because they are closely surrounded by the muscle tissue of the recti. Leakage of urine around the tube is rare and the fistula tends to close quickly after the tube is removed. The author performed the operation in one case of impermeable stricture two

cases of prostatic hypertrophy with difficult catheterization and massive hemorrhage, and two cases of prostatic hypertrophy with severe infection and acute epididymitis. Drainage was maintained from five to 117 days. Four of the cases healed by primary intention, and the fifth, while infected, was healed at the end of seven days.

Toxic Hyperplasia of Prostate Gland—Barnes carried out animal experiments in order to determine whether sterile prostatic secretion is toxic and, if so, its effect on animals in comparison with other substances of known toxicity. The work shows that prostatic secretion which contains no pus is quite toxic when injected into mice, rats and other animals, the toxicity of 1 cc being comparable to that of one-fourth grain (0.016 Gm) of morphine. The author believes that an excessive amount of prostatic secretion retained in the prostate results in absorption of this toxic substance, with resulting general and local toxic symptoms. He applies the term toxic hyperplasia of the prostate to this condition.

Skin Test for Diagnosis of Gonococcal Infections—Corbus states that the standard bouillon filtrate (Corbus-Ferry) contains two specific substances. The one, when injected intradermally is probably taken up by the histiocytes in the skin and produces a gonococcus antitoxin. The other presumably combines with the sensitizing antibodies and produces a typical allergic response in individuals infected with the gonococcus. These two reactions are easily demonstrated after twenty-four hours following a therapeutic dose of the bouillon filtrate. There is a large inflammatory zone, usually about 2 inches in diameter (antitoxin forming area), in the center of which is a smaller elevated and darker red zone (sensitizing response). However, when the bouillon filtrate is heated in an autoclave at 15 pounds pressure for fifteen minutes for two periods with average temperature of from 115 to 120 C, the antitoxin forming substance is destroyed and there remains a substance capable of eliciting a cutaneous response in individuals infected with the gonococcus. Having observed in a woman infected with the gonococcus what appeared to be a cutaneous wheal in the center of the inflammatory area produced by a therapeutic dose of bouillon filtrate, it appeared to the author that a similar reaction for diagnostic purposes might be obtained by using the filtrate. In order to prove definitely that the body is sensitized during gonococcal infections and that it is capable of giving an allergic response to the gonococcus protein contained in the gonococcus bouillon filtrate when injected intradermally, experiments were carried out which showed that the cutaneous test is founded on an allergic basis. The fact that this allergic state ceases with the disappearance of the gonococci may help to clarify many previously mistaken diagnoses and, in addition, furnish a specific test for a clinical cure.

Kentucky Medical Journal, Bowling Green

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- Evaluation of Skin Tests in Diagnosis of Diseases of Allergy T A Simon Louisville—p 3
- Surgical Aspects of Postoperative Care M J Henry Louisville—p 9
- Medical Aspects of Postoperative Care M Flexner Louisville—p 14
- The Temptations of the Doctor T E Gouwens Louisville—p 22
- Practical Prenatal Care B C Overby Paducah—p 25
- Resection of Kidney for Localized Pyonephrosis J R Sutes Louisville—p 28
- Chordotomy for Relief of Intractable Pain R G Spurling Louisville—p 29
- Evaluation of Newer Methods of Handling Pulmonary Tuberculosis E B Bradley Lexington—p 30
- Pylorospasm in an Adult Report of Case F G Spindel Louisville—p 38

Maine Medical Journal, Portland

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- Postganglionic Sepsis C H Gordon Portland—p 5
- *Placental Extract in the Control of German Measles Preliminary Report J Gottlieb Lewiston—p 10
- Encephalitis as Complication of Measles Case Report L M Cutler Bangor—p 12

Placental Extract in Control of German Measles—An opportunity to study the use of placental extract in the control of German measles came to Gottlieb during an epidemic in the Central Maine General Hospital and vicinity during April and

May 1935 The dosage administered by the various workers has been chosen arbitrarily from 5 to 2 cc intramuscularly May 16 the author gave sixteen nurses 4 cc of placental extract intramuscularly, and from that date to May 29 forty-six of the hospital personnel received 0.2 cc of the extract intradermally None of this group had given a history of having had German measles previously None of those receiving the large intramuscular dose (4 cc) or the small dose (0.2 cc) intradermally contracted the disease Nine cases of German measles were contracted during that period by a group similarly exposed, but who had not received the extract by either route Those who received 4 cc of the extract intramuscularly complained of soreness at the site of inoculation for a period varying from one to three days Those receiving 0.2 cc intradermally developed areas of erythema and tenderness measuring from 2 to 10 cm in diameter, which disappeared in from three to five days No systemic reactions were noted in either series

Medical Bull. of Veterans' Adm., Washington, D. C. 12 221 332 (Jan.) 1936

- Pulmonary Tuberculosis in Adults with Especial Reference to Clinical Forms Suitable for Artificial Pneumothorax J. L. Dubrow—p. 221
 *Syphilis as Factor in Cardiovascular Disease Review of Seventy Cases M. L. Weber—p. 228
 Arachnidism Spider Bite Poisoning W. H. Chapman—p. 241
 Traumatic Psychosis Case Reports E. D. McCullough—p. 246
 Far Advanced Pulmonary Tuberculosis Treated by Phrenic Nerve Avulsion Combined with Artificial Pneumothorax S. E. Stroube—p. 249
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 Coexisting Organic and Functional Symptoms in Neuropsychiatric Conditions F. E. Steele Jr.—p. 266
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 Incidence, Treatment and Prognosis of Hypertension C. L. Stretch—p. 275
 How the Law Treats the Psychotic J. P. Gunion—p. 283
 Pitfalls in Psychiatric Examinations L. M. Brown—p. 288

Syphilis and Cardiovascular Disease—Weber bases his discussion on a review of syphilitic cardiovascular cases from the Nashville office and a review of the current literature. He finds that 1 Next to the rheumatic and hypertensive arteriosclerotic groups of heart disease, syphilis is the most important etiologic factor in the production of cardiovascular disease. Men are affected more often. Negroes suffer more often from cardiovascular syphilis than white people, the ratio being about 3:1. 2 Aortitis is by far the most frequent manifestation of cardiac syphilis, aortic insufficiency and aneurysm closely following in frequency. Pure aortic insufficiency, aortitis and aneurysms, especially in persons in the fourth and fifth decades, are at least 90 per cent syphilitic. Direct syphilitic infection of the mitral and the tricuspid valve is so rare that some authors question its existence. 3 The condition underlying a syphilitic aortitis is an obliterative endarteritis of the vasa vasorum of the adventitia of the aorta, causing the intima to wrinkle and to lose its elasticity. The aortic wall weakens and stretches. The cusps of the aortic valve have a tendency to separate bringing on a regurgitation, in contrast to the rheumatic infection of the aortic valve, which has a tendency to unite the cusps causing stenosis. The heart is enlarged in most cases of aortic insufficiency. 4 Many years elapse between the onset of the infection and the appearance of cardiovascular symptoms, the average being from fifteen to twenty years. 5 The most frequent and early symptom is dyspnea, either on exertion or of the paroxysmal type. Precordial or substernal pain comes next in frequency. Giddiness, palpitation, nervousness and swelling of the ankles are commonly complained of. Signs found on physical examination in aortic insufficiency differ from those in aortitis. 6 A positive Wassermann reaction is found in the great majority of syphilitic heart cases in from 80 to 90 per cent. X-rays, electrocardiographic tracings and oscillography are other auxiliary methods helpful in arriving at a correct diagnosis. 7 In the seventy cases reviewed the most prominent symptoms referable to the heart were shortness of breath in 85.7 per cent, pain over the chest in 60 per cent, dizziness in 20 per cent, nervousness in 14.3 per cent and hoarseness, edema, cough and loss of sleep in 28.6 per cent. A diastolic murmur

over the base was found in every case of aortic insufficiency. A harsh systolic murmur was elicited in cases of aortitis without aortic insufficiency, the second aortic sound having a ringing quality. The average pulse pressure in the aortic insufficiency cases was 102. Enlargement of the heart or/and the aorta by percussion and roentgen examination was discovered in 71 per cent. A positive Wassermann reaction was shown in 72.8 per cent.

Military Surgeon, Washington, D. C.

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- Venereal Disease Problem in the American Expeditionary Force H. H. Young—p. 1
 Basic Biologic Aspect of War L. A. Fox—p. 22
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 Military Sanitation of Moses in the Light of Modern Knowledge E. E. Hume—p. 39
 Trichinosis Stimulating Enteric Fever Report of Two Cases W. M. Huber—p. 52
 Brief Resume of Modern Thoracic Surgery H. Lilienthal—p. 58
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New England Journal of Medicine, Boston

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- Blood Iodine Studies in Relation to Thyroid Disease Basic Concept of Relation of Iodine to Thyroid Gland Iodine Tolerance Test H. J. Perkin, F. H. Lahey and R. B. Cattell Boston—p. 45
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 Progress in Dermatology 1935 H. P. Towle and J. L. Grund Boston—p. 65

New Jersey Medical Society Journal, Trenton

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- Treatment of Cataract in History W. H. Hahn Newark—p. 7
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New Orleans Medical and Surgical Journal

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- Collapse Program in Advanced Pulmonary Tuberculosis C. A. Thomas and S. C. Davis Tucson Ariz.—p. 413
 Total Thyroidectomy for Cardiac Disease A. Ochsner and C. Gillespie New Orleans—p. 422
 Mycotic Infections of Skin J. K. Howles New Orleans—p. 435
 *Trichiniasis in Louisiana E. H. Hinman New Orleans—p. 445
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 Malinger Report of Case W. J. Otis New Orleans—p. 452
 Acute Mercury Poisoning E. Hull and L. A. Monte, New Orleans—p. 455
 Tumors of Mouth and Jaws H. G. F. Edwards Shreveport La.—p. 460

Trichiniasis in Louisiana—Hinman made a routine study of 200 consecutive necropsies from the State Charity Hospital of Louisiana. Infants were omitted. Small pieces of diaphragm muscle measuring about 2 inches square were obtained, finely ground up and placed in a 1 per cent solution of pepsin with 0.5 per cent hydrochloric acid. About 200 cc of the solution was used for each 10 Gm of muscle, following the technic of McCoy (1931). This mixture was placed in an Erlenmeyer flask in an incubator at 37 C for from five to six hours, during which time it was stirred continuously. By this method most of the muscle was digested, liberating the capsules if present. The material was strained through wire gauze into a funnel, which was closed by a rubber tube and pinchcock. Sedimentation was allowed to go on for one hour after which a few cubic centimeters was drawn off from the bottom of the funnel and examined microscopically for the encysted capsules or larvae. Of the 200 human diaphragms examined seven (3.5 per cent) were found to contain encysted larvae of *Trichinella spiralis*. From the numbers of larvae found in the diaphragms

these cases must have been rather light infestations and probably produced few if any clinical manifestations. Serial sections failed to reveal any embryos in those instances in which the method was used. In two of the seven cases larvae were found active within the capsules, indicating that the infection had not been present long. The existence of a 35 per cent infestation with *Trichinella* points to the fact that trichiniasis cannot be regarded as a public health problem of no significance in Louisiana. Careful differential diagnosis should reveal the presence of clinical cases in this state. The digestion technic could be utilized in the examination of biopsy material from suspected cases and may demonstrate larvae that are too few to be found by serial section.

Ohio State Medical Journal, Columbus

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- Cultivation of Virus of Lymphocytic Choriomeningitis in the Developing Chick Embryo Ida A Bengtson and J G Wooley —p 29
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Radiology, Syracuse, N Y

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*Duodenal Carcinoma Its Relationship to Duodenal Ulcer I H Startz Boro of Queens N Y —p 688
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Some Lawsuits I Have Met and Some of the Lessons to Be Learned from Them (Fourth Installment) I S Trostler Chicago —p 708
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Leontias Ossea Clinical and Roentgenologic Entity Report of Case J H Gemmell Philipsburg Pa —p 725
Role of the Roentgenologist in the Proper Management of Pleural Adhesions Preventing Effective Pneumothorax Collapse F Baum Newark N J —p 730
Histologic Study of Effects of X Rays on Frog Skin A E Light New York —p 734
Effects of X Rays on the Developing Chick J M Esenberg Chicago —p 739
X Rays and Radium in Treatment of Tumors of Conjunctiva G Peter Mexico City Mexico —p 745

Duodenal Carcinoma—Startz reports a rare case of duodenal ulcer of the supra ampullary portion of the duodenum combined with an independent primary carcinoma of the ampullary portion of the duodenum both of these lesions were visualized clearly in roentgenograms. The patient died from internal hemorrhage—an erosion of a blood vessel within the duodenal ulcer. There were no signs present of intestinal obstruction. The patient was 34 years old. Metastasis was present to adjacent lymph nodes and the liver. Brill states that metastasis even to the contiguous lymph nodes is not common. The patient was not jaundiced. Eger states that in cases of carcinoma of the ampullary portion of the duodenum jaundice generally appears early. The roentgenologic study is properly performed is the strongest link in the chain of diagnostic

methods. The well trained roentgenologist should be capable of detecting an 'organic' lesion in the small intestine. However, an attempt to specify the exact nature and site of the lesion is often a shrewd guess and may result in a fantastic roentgen diagnosis out of gear with that of the necropsy report. The presence of symptoms and physical observations suggesting a gastro-intestinal malignant condition (including absence of free hydrochloric acid in gastric contents and presence of occult blood in stools), together with the recognition of a small intestinal organic lesion roentgenologically, should spell a preoperative diagnosis of carcinoma of the small intestine.

Review of Gastroenterology, New York

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- Foods and Bulk Producing Drugs in Treatment of Chronic Constipation W A Bastedo New York —p 279
Value of Selective Drugs in Treatment of Constipation M G Mulinos New York —p 292
Physical Therapy in Constipation R Kovacs New York —p 302
Active Gastric Hemorrhage Differential Diagnosis and Treatment I W Held and A A Goldbloom New York —p 307
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Rhode Island Medical Journal, Providence

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- The Doctor Looks at the Cults C I Farrell Pawtucket —p 1
Purpura Haemorrhagica M Adelman Providence —p 9

Wisconsin Medical Journal, Madison

35 176 (Jan) 1936

- Prevention of Gout in Wisconsin A Challenge to the Medical Profession A S Jackson Madison —p 15
Comparative Study of Series of Prostatectomies and Resections H E Kasten Beloit —p 18
Prostatic Obstruction Comparison of Results in Fifty Transurethral Resections and Fifty Suprapubic Prostatectomies W M Kearns Milwaukee —p 23
Id Study of One Hundred and Seventy Eight Cases R Irwin Milwaukee —p 24
Brief Resume of Serodiagnostic Tests for Syphilis M J Reuter Milwaukee —p 30
Pericardial Effusion in Myxedema Report of Case Marie I Carus Madison and H J Lee Oshkosh —p 33
*Hypercalcemia and Hypophosphatemia Simulating Hyperparathyroidism Report of Three Cases B J Birk and H H Huber Milwaukee —p 36
Hyperparathyroid Osteitis Case Report J N Sisk Madison —p 41
The Role of the Physician in the Care of Unmarried Mothers and Adoptive Children New Laws Summarized Dorothy Waite Madison —p 59

Hypercalcemia and Hypophosphatemia Simulating Hyperparathyroidism—Birk and Huber cite three cases from the study of which it is apparent that signs of decalcification in roentgenograms were lacking as well as other symptoms of hyperparathyroidism. But one constant feature in each case was hypercalcemia and hypophosphatemia and this would strongly suggest hyperparathyroidism were it not for the fact that other definite signs were discovered. It is possible that in cases 1 and 3 there was a metastasis to the parathyroid with the consequent features simulating hyperparathyroidism and that in case 2 there was syphilis of the parathyroid causing secondary hyperparathyroidism. No postmortem studies were obtained in patients 1 and 3 and patient 2 is still alive. The authors wonder whether hypercalcemia and hypophosphatemia should be emphasized as pathognomonic of hyperparathyroidism at all or should rather be considered a secondary phenomenon caused by the excessive bone destruction in certain diseases which may involve the skeletal system. This view is opposed by Cantarow and Hare. It appears to the authors that a further study of blood calcium and phosphorus in malignant diseases and syphilis should be made. They believe that, when similar changes are observed no matter how small the percentage may be a parathyroidectomy would hardly be in order in every case of hypercalcemia and hypophosphatemia.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

10 397 458 (Dec.) 1935

- Coma with Glycosuria Not Due to Diabetes Mellitus G. B. Fleming, Agnes Herring and N. Morris—p. 397
- *Study of Sedimentation Rate in Juvenile Rheumatism W. W. Payne and B. Schlesinger—p. 403
- Serum Proteins in Normal Infants and Children Note J. B. Rennie—p. 415
- Familial Acholuric Jaundice Effect of Splenectomy on Red Cell Morphology Four Cases W. T. W. Paxton—p. 421
- *Skin Reactions to Products of Hemolytic Streptococcus H. J. Gibson and W. A. R. Thomson—p. 429
- Medical Treatment of Congenital Pyloric Stenosis Elisabeth Svendsgaard—p. 443

Sedimentation Rate in Juvenile Rheumatism—Payne and Schlesinger confirm the close relationship between rheumatic activity and the sedimentation rate. Acute tonsillitis and influenza may both cause more than a temporary rise in the sedimentation rate. This must be remembered when the test is used as possible evidence of active rheumatism. Chronic tonsillar infection on the other hand does not as a rule have any appreciable effect on the sedimentation rate. In acute chorea there is only a small, transient rise of the sedimentation rate. This may even be absent. No indication is given by the sedimentation rate of the possibility of subsequent cardiac involvement. In congestive cardiac failure the sedimentation rate frequently falls to normal even in the presence of active disease. This is a bad prognostic sign. The test is of value in detecting subacute rheumatism and miniature rheumatic fever following tonsillitis. When nodules are present the test has a prognostic significance. Fall of the sedimentation rate heralds their disappearance. In nonactive cases there were 140 children with no evidence of active rheumatism during the period of observation. Seventy-four of these had no signs of cardiac involvement and, with three exceptions, showed no rise in the sedimentation rate apart from intercurrent infections. There was no apparent reason for the raised values (17, 21 and 29 mm maximum) in three cases, except for tonsillar sepsis in one instance. Sixty-six children had had heart disease at some time or other. The sedimentation rate was normal in fifty-six and raised in ten. This rise was transitory in five. Active rheumatism was present in eighty-nine cases. Sixty-six showed rapid improvement and were finally considered no longer active from the clinical standpoint. The sedimentation rate showed a corresponding fall to normal in fifty-eight. In seven the sedimentation rate was higher or lower than was to be expected, and in one apparently quiescent case a fresh rise in the sedimentation rate appeared to herald a reawakened activity with chorea sometime after the patient returned home. The activity was marked and prolonged in sixteen cases. Here without exception the sedimentation rate was raised in close agreement with the clinical condition. Seven fatal cases occurred. All but one showed a raised sedimentation rate, but not so high as in many of the acute cases in which recovery occurred. Cardiac failure was prominent in the one case with normal values. Hence with every type of rheumatism there is close agreement between the sedimentation rate and the clinical picture, and this has been confirmed in many cases in this series by the subsequent history. In only twenty out of the 229 cases was there any discrepancy.

Skin Reactions to Products of Hemolytic Streptococcus—In an investigation of the relation of the hemolytic streptococcus to acute rheumatism, Gibson and Thomson performed intradermal reactions to an extract of a strain of that organism on 586 subjects, comprising rheumatic and control groups. The results suggest that great caution is necessary in interpreting any intradermal reaction. The possibility of altering the reactivity of the patient by a test inoculation is suggested. The results recorded with horse serum seem to be applicable to the various diagnostic skin reactions. For example the repetition of the double intradermal tuberculin test in cattle at short intervals might act as a sensitizing stimulus. The present study suggests that repeated intradermal tests not only sensitize but on a continuation of the series appear to

produce desensitization. Thus an irregular wavelike succession of sensitive periods is produced. Only 13.6 per cent of the Dick tests gave positive readings and, in the light of subsequent work, it appeared likely that these were not all true toxin reactions. From subsequent studies of fluctuations in the reaction to both the test and control reagents, besides the failure to neutralize certain of these reactions by antitoxin it would appear that some at least were simply the chance association of simultaneous reactivity to some constituent of the "toxin" fluid with temporary absence of reactivity to a constituent of the "control" fluid to which the individual might be at other times allergic. These observations suggest an explanation of pseudoreactions in which the control test is of greater size than the toxin reaction or even, as in some cases, when the control solution alone gives a reaction. The curves suggest that in the hypersensitive individual the principle responsible for pseudoreactions to toxin and control fluids may be regarded as different reagents, more or less distinct from one another so far as skin reactivity is concerned. The neutralization of reactions by homologous antiserum seemed to be related to some extent to the serologic type of the organism. The skin reaction characteristic of the allergy of infection is not neutralizable and there is no reason to think that any true antigenic toxin was responsible for the lesions produced. The results throw doubt on the conception of the skin reaction to extracts of hemolytic streptococcus as a true example of the allergy of infection, at least in adults.

British Medical Journal, London

2 1083 1138 (Dec. 7) 1935

- Osteo Arthritis and Its Concomitants R. G. Gordon—p. 1083
- Sea Bathing in Treatment of Surgical Tuberculosis H. Gauvain—p. 1087
- Radiation Therapy of Tongue Carcinoma R. A. Gardner—p. 1090
- *Orthopedic Operation for Cleft Palate D. Browne—p. 1093
- Mandelic Acid in Treatment of Urinary Infections D. M. Lyon and D. M. Dunlop—p. 1096
- Prevention of Severe Reactions in Gold Treatment of Rheumatoid Arthritis H. J. Williams—p. 1098

Operation for Cleft Palate—Browne adopted a procedure which combined many borrowed points and a few original ones into an operation for cleft palate that was more satisfactory than any he had tried before. It depends mainly on the deliberate freeing of the two separated ends of the sphincter, complete with nerve and blood supply, and their suturing in a plane closer than normal to the posterior wall. There is first the preliminary operation of removing the tonsils and cutting the posterior palatine arteries. Three months later the final stage is performed. The freeing incision runs from the canine tooth in front backward just inside the teeth, then along the line of the pterygomandibular raphe, cuts the anterior pillar of the fauces off the tongue, and ends in the middle of the empty tonsillar fossa. Through this, by forcible blunt dissection, the mucoperiosteum of the hard palate the mucosa of the floor of the nose and the whole side of the nasopharynx are freed so that they fall inward and backward toward the posterior wall. Then from the bottom of the incision that frees the soft palate a double suture of forty day number 1 chromic catgut is passed right round the back of the throat. It enters the tissues opposite the tip of the uvula, emerges in the middle of the posterior wall of the pharynx, is reinserted through the same puncture, and emerges again through the corresponding point to its insertion on the opposite side. The stitch should run behind the superior constrictor exactly in the line of Passavant's ridge. The action of this posterior part of the sphincter should be imitated exactly by pulling on the catgut and rucking up the back of the throat. The ends of this suture are left hanging out of the mouth and the edges of the soft palate are deeply split. This split continues backward the gap between the mucoperiosteum of the hard palate and the nasal mucosa and runs gradually diminishing in depth to the tip of the uvula. The continuous nasal surface of soft and hard palate is then joined by interrupted sutures, plain ones for the nasal mucosa and vertical mattress ones for the soft palate. A ring suture is passed through the substance of the soft palate, just in front of the insertion of the tendon of the tensor palati crossing the half-sutured gap in the middle and returning to its original insertion in a complete circle.

round the line of the sphincter. It is left untied. The oral surface of the soft palate and the mucoperiosteum of the hard palate are joined by vertical mattress sutures, and any tiny gaps in the epithelial junction are closed. The soft palate thus constructed should lie much closer to the posterior wall of the pharynx than normal. The test of its proper construction is to make the patient gag, when the new mechanism should be seen to work properly at the first time, shutting the throat completely. The intratracheal catheter is withdrawn and the ring suture is tied. Its two loops are tied separately with several knots, tight enough to close the passage completely. The whole area is cleaned and swabbed with 1,000 acriflavine hydrochloride in petrolatum. Nonabsorbable sutures can be removed a fortnight after operation. The palates usually stiffen considerably from inflammatory infiltration during the first month and then slowly become more mobile again, in six months they are thin and thoroughly supple. The author used this method in more than seventy cases. The patients were more than 18 months of age but otherwise were unselected. Fifty-two cases healed completely by first intention. The functional results provoked spontaneous remarks on the improvement in speech.

Journal Obst & Gynaec of Brit Empire, Manchester

42 953 1186 (Dec) 1935

- Follicular Hormone and Ovulation Inhibition. G Dahlberg—p 953
*Human Infertility. Study of One Hundred Matings. A W Rowe—
—p 962
Constriction Ring Dystocia. L Rudolph—p 992
Anemia in Gynecologic and Obstetric Practice in New Zealand. M
McGeorge—p 1027
Blood Vessels of Involuting Uterus of Rabbit. E A Gerrard—
p 1048
Resistance to Proteolysis Found in Blood Serum of Aborting Women.
E Shute—p 1071
*Is Estrin the Cause of Resistance to Proteolysis Found in Blood Serum
of Aborting Women? E Shute—p 1085
*Amniography. F J Burke—p 1096
A Thousand Cases of Abortion. T N Parish—p 1107
Advanced Abdominal Pregnancy. Case. A Sarkar—p 1122

Human Infertility—Rowe gives the results of a study of a consecutive series of 100 infertile couples to ascertain so far as possible, the causal or contributory factors. Studies were made on both partners involving a general clinical and laboratory investigation of each supplemented by comprehensive gynecologic and urologic studies on the wife and husband respectively. Although nine of the men and three of the women were adjudged normal, each series shows an incidence of constitutional conditions that could affect fertility actually in excess of the number of patients. In other words, 188 individuals present 213 constitutional disorders of a degree worthy of record. In addition to these, a large number of local conditions were discovered that could also influence the outcome of the mating. Each union in the series presented an average of nearly five significant impediments to fertile mating. Constitutional elements, notably the glandular disorders, are or may be correctable by proper therapeutic measures, a fact most pertinent to the possible solution of the problem. As the author conceives it, true fertility of the individual is the summation of the number of functions all maintained at normal levels coupled with a complete absence of all impeding agencies either local or constitutional. Varying degrees of infertility result as one or more of these criteria fail to be realized. Infertility is again a summation of all the subversive agencies in which the total, if below a critical boundary or zone, is incompetent to abolish the possibility of fertility but can lower its probability. When two partners of low fertility are united the probability of successful impregnation and pregnancy is lowered still further though each mated with one of high fertility might well participate in a fertile union. Therapy for the condition depends on the correction of all impediments that are correctable and palliation of those in which this represents the sole possibility; thus the index of fertility will be raised and may finally overstep the critical boundary. In that portion of the series in which therapy could be and was applied the outcome has been correction in 50 per cent of the cases. With the development of more effective therapeutic approaches along all indicated lines but more especially in the endocrine field a still larger proportion of success may result.

Estrogenic Substance and Abortion—As the danger of the patients' aborting was to be considered, Shute used two cases in which abortion was desirable from a medical point of view. The results demonstrate that the injection of a potent gonadotropic preparation of pregnancy urine may for a period of a few hours reproduce in the normal blood serum of the patient the effect ascribed to an estrogenic-like substance. If the work on animals is a guide to a proper interpretation of the phenomenon, estrogenic substance is actually produced by follicle ripening, and the effect on the blood serum may be due to this substance. No satisfactory explanation has ever been offered for the failure of the placental villi to penetrate the uterine wall as far as the serosal coat, since they normally are able to erode their way into the myometrium for a considerable distance. It has been taken for granted that there is a certain amount of maternal resistance to such encroachment of the fetal trophoblast throughout every pregnancy. When such resistance is excessive, pregnancy ends prematurely. The placental villi in normal and abnormal pregnancy themselves possess, and possibly secrete, the antagonist to their own erosive agents. Presumably the two tendencies exist during a normal gestation in a progressive equilibrium, and thus the intrusive villi are held in check. But excesses of the resistant factor induce premature termination of pregnancy. In this connection Philipp found estrogenic material principally in the chorionic layer on the fetal side of the placenta. The author finds it difficult to gather together all the different links in the evidence presented but there seems good reason to believe that a substance closely resembling the estrogenic principle, if not actually the substance, is responsible for the appearance in the blood of spontaneously aborting women of a characteristic resistance to the action of the proteolytic ferment trypsin. That it is at least a major factor in the production of abortion has been indicated by extensive work on animals, and the foregoing fact strongly suggests that the same holds true for the human female. It is not improbable that pregnancy is interrupted before term by a premature activity or concentration of the agent or agents responsible for the onset of labor at term, and estrogenic material appears to play a major part in that event.

Amniography—Burke points out that placenta praevia can be diagnosed by amniography. The most characteristic radiographic appearances of the placenta in utero are obtained when the placenta occupies the lower uterine segment. There are a number of factors that materially influence the success of the investigation. Obesity of the patient will defeat the most enthusiastic investigator. As the placenta cannot be seen unless it is viewed in profile more than ordinary care is necessary in conducting the roentgen examination. The amount of amniotic fluid has an important bearing on the result. If there is an excess, the density of the shadow produced by the contrast medium may be insufficient for diagnostic purposes and, unfortunately, there is no rapid method by which the amount of amniotic fluid can be estimated. On the other hand, if the fluid is scanty in amount, uterine puncture may be unsuccessful. This probably is the most serious obstacle in amniography, and in a certain percentage of cases it cannot be performed. In most cases amniography is unnecessary, yet a marginal placenta praevia, which may prove fatal may at an early stage be indistinguishable from a mild accidental hemorrhage. Amniography in all cases of antepartum hemorrhage does not seem practical, nor is it likely to be profitable. The indications for amniography may perhaps be defined by stating that, if in a doubtful case of placenta praevia the history of the case, the physical signs and other important considerations, e.g., age of the patient, parity or desire for a live child, are sufficient to indicate cesarean section as a possible mode of delivery, amniography should be performed. But if delivery will be natural in any case there is little or nothing to be gained by subjecting the patient to the examination. The main value of amniography appears to be as a deciding factor for or against delivery by cesarean section. Therefore there is a definite place for amniography in antepartum investigation. The placenta is actually visualized so that there is no difficulty in deciding whether the placenta praevia is central, marginal or lateral in type. With such accurate information, and having due regard to other circumstances, the mode of delivery should

no longer be in doubt. If the diagnosis proves to be one of central placenta praevia, cesarean section can be undertaken with beneficial results to the child and in full confidence that the mother is not being exposed to unnecessary risk. If lateral placenta praevia is diagnosed, natural delivery can be awaited without undue apprehension for the safety of the mother or the child.

Journal of Physiology, London

85 421 518 (Dec 16) 1935

- Two Types of Retina and Their Electrical Responses to Intermittent Stimuli in Light and Dark Adaptation R. Granit —p 421
Measurement of Red Cell Volume Conductivity Measurements E. Ponder —p 439
Tall in Blood Lymphocytes of Dog Under Chloralose Anesthesia J. M. Yoffe —p 450
Vitamin B₁ Deficiency in Rats Brain J. R. O'Brien and R. A. Peters —p 454
Slow Potential Waves in Superior Cervical Ganglion J. C. Eccles —p 464
*Fate of Antidiuretic Principle of Postpituitary Extracts in Vivo and in Vitro H. Heller and F. F. Urban —p 502

Antidiuretic Principle of Postpituitary Extracts—Heller and Urban find that the antidiuretic hormone of the posterior part of the pituitary is adsorbed by the blood and by tissue suspensions in vitro. If the specific adsorbing capacity of defibrinated blood is 1, then those of muscle, brain, kidney and liver are 2, 2.5, 8 and 58. The adsorbing capacity of the tissues for the antidiuretic hormone is due to the presence in the tissue of a heat-labile substance that has been extracted. Extracts of liver adsorb more than extracts of kidney. The adsorbing substance can be removed from the extracts by animal charcoal. The blood and the liver contain an enzyme-like substance that destroys the active principle. The rate of destruction in vitro by the blood varies in different species. The quickest destruction occurs in human blood (from 25 to 50 millunits per cubic centimeter of blood in from one and one-half to two hours). Cerebrospinal fluid neither adsorbs nor destroys the antidiuretic principle. After injection of large doses of postpituitary extracts the antidiuretic activity of the circulating blood of the rabbit disappears in from twenty to thirty minutes. The disappearance of the same amount of pituitary extract in the corresponding amount of blood in vitro takes from three to four hours. If large quantities of the antidiuretic hormone are injected intravenously into rats part of it is excreted in the urine.

Tubercle, London

17 97 144 (Dec.) 1935

- *Measurements of Filter-Passing Particles of Tubercle Bacillus E. M. Fraenkel and R. J. V. Pulvertaft —p 97
Cavitation in Pulmonary Tuberculosis Review of One Hundred Cases R. Y. Keers —p 106
Complement Fixation in Pulmonary Tuberculosis with S and R Antigens G. B. Reed, Christine E. Rice, J. H. Orr and B. G. Gardiner —p 114

Measurements of Filter-Passing Particles of Tubercle Bacillus—Fraenkel and Pulvertaft obtained positive results with the injection of ultrafiltrates from tubercle bacilli (bovine type "Vallee") into guinea-pigs. Infection was obtained by injection into testes or lymph nodes of the neck (Ninni). Ultrafiltrates after filtration retaining other organisms were positive on seven occasions after passing collodion filters with pores of 0.75 micron, twice after passing filters with pores of 0.3 micron and on three occasions after passing Chamberland's L candles. From these results the authors conclude that granules and smaller young tubercle bacilli said by Morton Kahn to have a size of from 0.1 to 0.3 micron may have passed through the filters. The filtrate produced mostly localized lesions on the site of the injection, with a few other foci in other organs, spleen or liver. Inoculation of the primary infection produced a generalized tuberculosis in the second generation. Tubercle bacilli could be demonstrated after infection by ultrafiltrates of cultures and by animal inoculation when smears and sections were sometimes negative and histologic changes uncertain. Intracellular acid-fast granules were sometimes present in tuberculous lesions in both gland and spleen. These, however, probably partly consisting of acid-fast mitochondria were also although more rarely present in normal controls.

Revue de Chirurgie, Paris

54 669 756 (Nov.) 1935

- Late Infectious Sequels of War Fractures of Limbs Sarroste —p 669
*Treatment of Occipital Neuralgia by Alcoholization of Carotid Artery F. K. Kessel —p 739
*Attempted Treatment of Impotence by Alcoholization of Spermatic Artery A. Popow —p 749

Treatment of Occipital Neuralgia—If occipital neuralgia by analogy to neuralgia of the trigeminal nerve is a vasomotor neurosis, then, according to Kessel, influencing these vasomotors can cause the disappearance of the pain that accompanies the neuralgia. A review of the anatomy shows that the carotid artery with its internal and external branches is innervated principally by the sympathetic fibers which leave the cervical ganglion and the sympathetic chain and form the external and internal carotid plexus about these vessels. Interrupting these nervous passages by periarterial sympathectomy should prevent the pain caused by angiospasm. In two cases the author succeeded in stopping the pain of occipital neuralgia by interrupting these nerves. The technic consisted in careful dissection of the carotid artery. After denudation of the artery it was surrounded by compresses to preserve the surrounding tissues from the action of the alcohol. Then the walls of the artery were moistened with 80 per cent alcohol by means of small tampons. The walls of the vessel become first white and then dark. The impregnation lasts four or five minutes after which the compresses are removed and the incision is closed. No light is thrown on the etiology of this condition, but the success and ease of the procedure recommend it in cases in which conservative measures prove ineffective.

Treatment of Impotence—Popow discusses male sexual impotence in which the difficulty seems to be a functional disorder of erection. There appear to be several sources of nerve supply which control erection and it has been suggested several times that impregnation of the spermatic artery with various solutions might help the condition. In 1933 and 1934 the author performed thirteen operations on the sympathetic nerves of the spermatic artery by impregnation of the artery with 80 per cent alcohol. The operation, which is painless, is performed under a local anesthetic with 0.5 per cent solution of procaine hydrochloride. The incision is made near the external inguinal ring, the spermatic cord is isolated and the spermatic artery is impregnated with 80 per cent alcohol. As a rule the vas deferens is also impregnated. Care must be used in finding the artery. All but one of the patients were between the ages of 20 and 30 years. The results were good in all instances, but longer periods of observation and a greater number of patients are desirable.

Annali di Ostetricia e Ginecologia, Milan

57 1711 1903 (Dec 31) 1935

- *Unilateral Castration by Roentgen Rays Experiments E. Momigliano —p 1711
Diagnosis of Pregnancy with Bercovitz's Method S. Defendi —p 1751
Fatal Gravidic Toxicosis Anatomopathologic Study of Case F. Matteucci —p 1759
Traumatic Retroflexion of Uterus G. Albano —p 1777

Unilateral Castration by Roentgen Irradiation—Momigliano carried out experiments producing unilateral castration in female rabbits by means of roentgen irradiations on an ovary of the animals. He also made comparisons of the results of this form of unilateral castration with those of surgical unilateral castration in the same animals. The results of the experiments proved that it is possible to cause unilateral castration by roentgen irradiations. No unfavorable effects are produced in the remaining ovary. The modifications produced in the remaining ovary are in relation to the phase of genital development of the animals. In prepubertal female rabbits the ovary develops rapidly reaching a size greater than normal, and there is an early maturation of the follicles. In adult female rabbits in the period of sexual activity, the remaining ovary develops a compensatory hypertrophy which affects especially the interstitial glands. The modifications produced in the remaining ovary by the roentgen irradiations are more favorable than those produced by surgical unilateral castration. It is probable that this is due to the mechanism of action of the roentgen irradiations which permit the products of involution of the irradiated ovary to act as necrohormones and to be absorbed by the remaining ovary.

Riforma Medica, Naples

51 1897 1936 (Dec 14) 1935

Internal Medicine in Italy at Present Time L D Amato—p 1899

*Treatment of Empyema of Lung and Pulmonary Fistulas by Intrapleural Irradiations O M Mistal—p 1905

Late Laparotomy in Abdominal Contusions G Marsiglia—p 1910

Treatment of Empyema by Intrapleural Irradiations

—Mistal advises direct irradiation of the pleural cavity by ultraviolet rays combined with currents of high frequency in the treatment of empyema and fistulas of the lung and pleura following artificial pneumothorax or complicating pulmonary diseases in which the pleura is opened as a result of a previous operation. The author uses an electrode 20 cm in length and 6 mm in diameter and containing a small amount of mercury, in contact with a neutral gas which causes elevation of the temperature of mercury and hence increases its tension and produces abundant ultraviolet rays. The electrode has also a chamber for ionization and is connected with a diathermy apparatus. The output of rays is constant and even. The instrument should be wrapped with soft and elastic rubber, only its distal end being left uncovered. The back part of the instrument is then inserted up to a fourth of its length into a hard rubber covering through which the instrument is connected with the diathermy current. The patient is placed on the operating table in the same position as for a pneumothorax. Introduction of the electrode in the pleural cavity and irradiations are done under pleuroscopic control. The intensity of the current is carefully and slowly controlled, because of the great sensitivity of the tissues and because direct irradiations are ten times more intense than the indirect ones. The current is regulated by an assistant under the direction of the surgeon. The treatment has a bactericidal and also a biologic osmotic and healing action on the tissues, it sterilizes the pleural cavity, diminishes the empyema until complete disappearance, and heals the pleura and the fistulas.

Prensa Medica Argentina, Buenos Aires

22 2341 2386 (Dec 4) 1935 Partial Index

Progress in Knowledge of Sterility in Women and Its Treatment L Fels—p 2341

Tuberculous Leprosy Clinical and Histopathologic Study S Schujman—p 2347

*Conduct to Be Followed with Port of Entry of Tetanus F M Bustos—p 2368

Pyrethrines in Treatment of Intestinal Parasitosis Preliminary Report J E Camponovo—p 2371

Port of Entry of Tetanus—Bustos discusses the advisability of intervention with wounds that are the port of entry of tetanus, when the disease is already in evolution. The author advises cauterization of the wound in the treatment of tetanus caused by penetrating and small superficial wounds and reports one case. Cauterization is done while the patient is under regional anesthesia by infiltration. In administering anesthesia care should be taken to prevent the transference of bacilli from the wound to its surrounding tissues which may occur if the needle is placed too close to the wound. It is important to precede any operation or treatment of the wound by repeated administrations of large doses of antitetanic serum as any handling of the wound promotes diffusion and generalization of the toxins.

Archiv fur Verdauungs-Krankheiten, Berlin

58 249 372 (Dec) 1935

Decomposition Products of Blood in Fecal Excretions in Disturbances of Gastro-Intestinal Tract I Bors—p 249

*Demonstration of Occult Hemorrhages of Gastro-Intestinal Tract with Special Consideration of Coproporphyrin and Hemoglobin W Hicker—p 268

Clinical Significance of Modified Takata Reaction for Diagnosis of Hepatic Disturbance R Mancke and K Margaronis—p 298

Significance of Catalase (and Triboulet) Reactions for Diagnosis and Prognosis of Intestinal Disturbance S Kemp and T T Andersen—p 312

Influence of Short Wave Therapy on Functions of Normal Stomach H Bruer—p 29

Results of Dietetic Experiment (of Twenty Five Months Duration) in Case of Low Protein Intake B Suskind—p 342

Occult Hemorrhages of Gastro-Intestinal Tract—Hicker, in investigating the method suggested by Bors for the detection of unchanged hemoglobin in the feces found that the

positive outcome of this test does not indicate the presence of unchanged hemoglobin, since he obtained the same results with feces that contained only hematin but no hemoglobin. He found also that under favorable conditions it is possible to detect coproporphyrin (deuteroporphyrin) if only 1 mg is present in 100 Gm of feces, of which 10 Gm is examined according to the method of Schumm. In comparative tests, Boas's modified method proved somewhat less sensitive than Schumm's method. The author describes observations on persons who, after having been kept on a blood-free diet for a longer period, ingested smaller or larger quantities of their own blood or of blood from cattle. He reaches the conclusion that, with the consideration of the sources of error, the demonstration of coproporphyrin in the feces according to Schumm or Boas has diagnostic value. On the basis of the author's observations the pressure of coproporphyrin indicates that hemoglobin or hematin has entered the intestine. In order to exclude the introduction of these substances from the outside, it is necessary to enforce a blood-free diet for some time preceding the test. However, the author stresses that a negative outcome of the coproporphyrin test does not definitely exclude a source of bleeding within the intestinal tract, because after slight hemorrhages coproporphyrin is formed in such small amounts that it is not detectable. He thinks that the hematin tests will as a rule be adequate in cases in which ulcer is suspected. In the case of negative outcome of the hematin test, he considers it advisable to search for coproporphyrin and for increased quantities of protoporphyrin. In cases in which carcinoma is suspected, coproporphyrin should be searched for.

Beitrage zur Klinik der Tuberkulose, Berlin

87 227 338 (Dec 18) 1935 Partial Index

Roentgenograms of Curative Processes in Tuberculosis of Bones and Joints A Roller—p 227

*Peculiar Anaphylactic Pulmonary Disease D Engel—p 239

*Immunization Experiments on Guinea Pigs with Killed and Dead Tubercle Bacilli A Berg—p 251

*Medicothorax a New Form of Pneumothorax Therapy W Muller—p 258

Subphrenic Pneumothorax Subphrenic Pneumothorax Combined with Phrenic Exeresis L M Kugelmeier—p 262

*Meinicke Tuberculosis Reaction and Relations to Tuberculin Sensitivity of Skin K A Lammler—p 291

Peculiar Anaphylactic Pulmonary Disease—Engel calls attention to the so called privet cough, which occurs in China with considerable frequency during May and June. It is popularly termed privet cough because it is believed that it is caused by the pollen of privet (*Ligustrum sinense* and *Ligustrum lucidum*). He describes observations he made on himself as well as on others. The general symptoms are mild, the sputum is of a canary yellow and has a slight metallic taste, there is a severe eosinophilia and roentgenoscopy discloses a pulmonary infiltrate, which however is only temporary and disappears in a comparatively short time. The author thinks that the disorder is an allergic manifestation of the lung in the form of a circumscribed spotted pulmonary edema, which may be elicited by a type of pollen. He recommends the term "allergic vernal edema of the lung." He suggests that the so called laurel fever, which occurs in the New England states, is an analogous disorder. Moreover he thinks that the "succedaneous infiltrates," which Löffler observed in Europe and which have the same roentgenologic aspects as his cases of vernal edema of the lung, may be of the same nature. The vernal edema has differential diagnostic significance because of its roentgenologic similarity with tuberculosis.

Immunization with Dead Tubercle Bacilli—In his experiments Berg used for the immunization of forty-eight guinea pigs human tubercle bacilli that had been killed by high temperatures and of forty-eight others tubercle bacilli that had died in the course of prolonged storage after removal from the culture mediums. The immunization was done in the following manner. With 5 mg of culture material, a suspension was made in 0.5 cc of physiologic solution of sodium chloride and this suspension was injected into the animals three times, at intervals of two weeks. In half of the animals the administration was intraperitoneal and in the other half subcutaneous. Several weeks after the last injection the animals were super-

infected by means of a mixture of three virulent strains. The doses used for superinfection were small. One half of the animals were infected with 0.000001 mg and the other half with 0.0000002 mg. With the exception of one case, the immunization was a failure. In a small number of animals a slight immunizing effect was noticeable in that the disease process developed more slowly. The author concludes that his studies did not prove that treatment with killed tubercle bacilli produces immunity against tuberculosis.

Use of Disinfectants in Pneumothorax—Muller decided to combine the curative action of the disinfecting substances, which formerly were introduced into the lung by means of inhalation, with pneumothorax therapy. He urged the construction of special pneumothorax apparatus, which permits the introduction of air charged with gaseous medicaments. He atomizes with the following prescription: acriflavine hydrochloride 0.25 Gm, triturated camphor 1 Gm, menthol 1 Gm, thymol 0.25 Gm and sufficient oil of eucalyptus to make 10 Gm. This quantity is used for one pneumothorax. The most noteworthy effect of this medicothorax is the complete prevention of an exudate, which definitely proves that the pleural space has been sterilized. Another advantage of the medicothorax treatment is the more rapid cure of the tuberculous process. The disappearance of the fever is more rapid than in ordinary pneumothorax treatment.

Meinicke Tuberculosis Reaction—Lamml made the Meinicke reaction for tuberculosis on 240 persons. Among them were patients with pulmonary and other types of tuberculosis, patients with other disorders and healthy persons. In the course of these investigations the author was able to show that open tuberculosis and particularly the severe cases of this form produce a positive reaction more frequently and also with greater intensity than do the closed forms of pulmonary tuberculosis and the extrapulmonary tuberculosis. He found that clinical manifestations, such as exudative pleurisy, pneumothorax exudate and hematogenous disseminations are more frequent in the cases in which the Meinicke reaction was weak. Tests on thirty persons without clinical signs of tuberculosis proved the differential diagnostic significance of the reaction and indicated that the extremely weak positive reactions should not be given a positive interpretation, for only the so-called curvature reaction (accumulation of sediment in the bottom curvature of the test tube) is reliable. Approximately 150 patients were subjected also to the Pirquet test, and its quantitative outcome was compared with the outcome of the Meinicke reaction. It was found that, as the Meinicke reaction becomes more strongly positive, the Pirquet reaction becomes weaker, that is it appears that they are inversely proportional. In this connection the author suggests that, if the Meinicke reaction really indicates the amount of antibodies it would seem that the quantity of antibodies in the blood serum and the tuberculin allergy of the skin (measured by the Pirquet reaction) are in inverse proportion to each other. Thus it appears that allergy and immunity do not run parallel but rather are inversely proportional.

Deutsche medizinische Wochenschrift, Leipzig

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Role of Natural and Acquired Resistance in Course of Pulmonary Tuberculosis H Beitzke—p 6

Dick Test in Negroes of Western Coast of Africa F von Bormann—p 7

*Early and Erroneous Diagnoses of Extra Uterine Pregnancy J Granzow—p 13

Cause and Treatment of Acute Polymyositis H Stursberg—p 17

Withdrawal of Morphine with Ovarian Hormone W Pettersson—p 17

Diagnosis of Extra-Uterine Pregnancy—Granzow says that extra-uterine pregnancies present a great variety of clinical pictures. Amenorrhea and genital hemorrhage are not necessarily an indication of extra-uterine pregnancy and the Aschheim-Zondek test is of much less value for the recognition of ectopic pregnancy than for that of intra-uterine pregnancy. To be sure, its positive outcome has proved valuable in a number of cases of ectopic pregnancy but its negative result does not permit the conclusion that there is no extra-uterine pregnancy. The author calls attention to Hegar's sign as an indication of normal pregnancy and says that extra-uterine pregnancy is indi-

cated by a softening of the entire uterus, but particularly in the region of the upper part and of the fundus. He warns against the erroneous interpretation of the enlargement of the ovary by the corpus luteum in some cases of intra-uterine pregnancy, for this manifestation may suggest a tubal pregnancy in sensitive women. This possibility demonstrates the importance of correct palpatory examination, but the author warns against too forceful palpation, since it may cause rupture of the fetal sac. He describes the acute course of a ruptured tubal pregnancy and also the subacute form of extra-uterine pregnancy. Extra-uterine pregnancy may be mistaken for an incomplete abortion and may be subjected to curettage, such a procedure involves great danger in case of ectopic pregnancy and "diagnostic" curettage must be carefully avoided if there is a suspicion of ectopic pregnancy. Adnexitis is another condition that is readily mistaken for ectopic pregnancy. For the differentiation of these two conditions the author recommends diagnostic puncture of the Douglas pouch done only in the hospital. Other erroneous diagnoses that the author encountered in cases in which an ectopic pregnancy was established by a surgical intervention were menorrhagia, ovarian tumor and intra-uterine pregnancy complicated by myoma hemorrhages. He emphasizes that the possibility of an ectopic pregnancy should be more often taken into consideration in the case of obscure abdominal disorders of women.

Klinische Wochenschrift, Berlin

15 140 (Jan 4) 1936 Partial Index

Relation Between Protein and Mineral Substances and Its Significance for Ionic Antagonism H Jarnecke—p 6

Antitoxic Whooping Cough Serum from Horses A Demnitz W Schluter and H Schmidt—p 10

Capacity of Human Blood to Decompose Acetylcholine T von Verebely Jr—p 11

*Absence of Basal Joint Reflex in Epileptic Attack and Its Diagnostic Significance G Stiefler—p 16

Is Diphtheria a Septicemic Disorder with Secondary Localization of Pathogenic Organisms on Tonsils? K W Clauberg—p 18

Absence of Basal Joint (or Finger-Thumb) Reflex in Epileptic Attack—Stiefler reviews the earlier literature on the so-called finger-thumb or basal joint reflex elicited by passive flexion of the basal joint (metacarpophalangeal) of one of the four three-jointed fingers (the third or the fourth is the best) and resulting in an oppositional movement of the first metacarpal, flexion of the basal joint of the thumb and extension of the terminal joint. The thumb remains in this position as long as the finger is held flexed. The author points out that this reflex, which was first described by C Mayer, is a true joint reflex, a proprioceptive reflex in Sherrington's meaning of that term. It is related clinically and perhaps also biologically to Leris sign on the forearm. It is elicitable in from 87 to 95 per cent of normal persons, that is, in those who are free from organic disease of the nervous system, but it is absent in young children up to the third year of life. The clinical value of the reflex lies in the fact that it is absent in paralysis and severe paresis in the region of the hand and fingers, resulting from focal disease of the brain. Moreover the reflex is frequently increased in cases of meningitis. The author describes the behavior of this reflex in thirty-six patients with epilepsy. He and Mayer had observed during their early investigations that the absence of the basal joint reflex is characteristic for the fully developed epileptic attack and thus is helpful in differentiating the true epileptic attack from hysterical or simulated attacks provided the reflex is present during the time the patient is free from the epileptic attack. The author found that during the postparoxysmal coma the light reflex of the pupils returns to normal much earlier than the basal joint reflex. He resorted to Foerster's method of artificial production of epileptic attacks by means of hyperventilation and thus was able to observe the basal joint reflex 'from beginning to end'. In regard to the epileptic mental disturbances, the author says that, in the cases of excitation and distraction in which the pupillary light reflex is abolished the basal joint reflex is either missing or reduced while there are no changes in the abdominal knee and plantar reflexes. From this the author concludes that the behavior of the basal joint reflex deserves especial attention in cases of suspected epileptic mental disturbances. The value

of the basal joint reflex in epilepsy is reduced, however because it is missing or is asymmetrical in almost 10 per cent of epileptic patients (investigations in 350 cases of epilepsy). However, the author thinks that this disadvantage is not nearly as great as the advantages of the reflex and concludes that the basal joint reflex is an important criterion for the completely developed epileptic attack in those cases in which it can be elicited outside the attack.

Medizinische Klinik, Berlin

32 140 (Jan 3) 1936 Partial Index

- Hemorrhagic Diathesis During Senility H Curschmann —p 1
Surgical Treatment of Pulmonary Abscess A Rutz —p 4
Advantages and Dangers of Winter Sports Marloth —p 9
Pulmonary Diseases as Result of Occupational Injuries J E Kayser Petersen —p 14

*Rickets and Menarche H Dworzak —p 17

*Treatment of Pneumonia with Quinine Calcium F Raue —p 19
Question of Exchange Between Blood and Brain G Jorns —p 21

Rickets and the Menarche—Dworzak points out that some diseases of childhood, particularly rickets influence the time of onset of the menstrual function. At his clinic it had been noted that the menstrual function appeared rather late in women who had had rickets when they were children. To obtain data, he compared the time of menarche in 1,200 women who had had rickets and whose skeletal system showed post-rachitic changes with the time of menarche in 1,220 women who had no signs of rickets. Since all the women came from the same territory and from about the same social stratum, climatic, residential and social factors can be disregarded in this material. Tabular and diagrammatic records of the results of the author's studies indicate that the onset of the menstrual function is considerably retarded in rachitic women. He cites other investigators who observed a retarded menarche in women with kyphoscoliosis and he also cites a report about the comparatively high incidence of pelvic anomalies in women in whom the menarche had been late. He reviews animal experiments which demonstrated the development of ovarian and uterine disturbances in animals with experimental rickets. In this connection he points out that it is a widely accepted opinion that rickets is not confined to the skeletal system but involves other systems as well. In view of the animal experiments mentioned, the author considers it probable that the ovaries frequently become impaired in case of rickets.

Treatment of Pneumonia with Quinine-Calcium—Raue treats cases of lobar pneumonia with quinine-calcium (a stable solution of the calcium and quinine salt of levulinic acid, containing 0.9 per cent of calcium and 3 per cent of quinine). He commences with the intravenous injection of 10 cc of this solution. In cases of average severity he follows this first injection with daily intramuscular injections and in severe cases with an intravenous injection in the morning and an intramuscular injection in the afternoon, every day until the fever has disappeared. The author found that this treatment produced a favorable effect primarily in cases in which it was begun on the first or second days. In these cases the fever disappeared rapidly, the general condition improved and the local process was rapidly absorbed. The course of the disease was considerably shortened. In patients in whom the quinine calcium treatment was begun between the third and sixth days after the onset the influence on the general condition was likewise favorable but the course was not noticeably shortened. The author considers this mode of treatment especially advantageous for the general practitioner because the majority of patients come under his observation on the first or second day after the appearance of the first symptoms of pneumonia. The quinine calcium treatment should be instituted at once, even if the diagnosis is not yet absolutely certain. If the intravenous injection of quinine calcium should prove difficult, an intramuscular injection can be given. The injection should not be made into the fatty tissue of the gluteus but rather deep into the muscle. If this is done the injection is well tolerated and abscess formation is avoided. Another reason why the quinine-calcium treatment is especially advantageous for the general practitioner is that the serotherapy of pneumonia presents certain difficulties for him.

Strahlentherapie, Berlin

54 597 724 (Dec 21) 1935 Partial Index

- *Roentgen Irradiation of Kidneys in Case of Poisoning with Mercury Bichloride J Balazs and W Czunft —p 600
Irradiation of Postoperative Relapses of Uterine Carcinoma I von Buben —p 607
Roentgenotherapy of Mastitis E von Gajzago —p 639
Examination of Fine Biologic Structures J von Herman —p 645
*Analgesic Action of Roentgen Rays P von Meszoly —p 658
Radium Treatment of Climacteric Hemorrhages J Molnar —p 664
Injuries Caused by Roentgen Rays G Ninasz —p 670

Roentgen Irradiation of Kidneys in Mercury Bichloride Poisoning—Balazs and Czunft state that Stephan was the first to employ roentgen rays for the purpose of counteracting nephritic anuria. Later other investigators tried to find an explanation for the onset of the diuresis from four to eight hours after exposure to roentgen rays. Some authors assumed an irritating action while others ascribed the efficacy of the treatment to the action of the rays on the vessels of the kidney. It was the aim of the authors to investigate (1) whether roentgenotherapy is capable of counteracting an existing anuria and (2) what effect is obtained in cases of milder renal lesions or in oliguria. They emphasize that in estimating the results it is necessary to take account of the fact that in cases of poisoning with mercury bichloride the anuria as well as the oliguria may subside spontaneously. They think that an irradiation can be considered effective only if the favorable effects become manifest within the first twenty-four hours after the irradiation. The authors report the results they obtained with roentgen treatments in eight patients with anuria and in ten patients with oliguria. In some cases they employed larger doses (150 roentgens depth dose) on two successive days or they employed smaller doses (115, 100, 60 or even less roentgens) on two or more successive days, but with the exception of one case the anuria was never counteracted. Even in the one case the effect of roentgenotherapy is not certain, for an improvement to the extent observed has been known to occur in cases in which irradiation has not been employed. In the ten patients with oliguria, only smaller roentgen doses were applied. In these patients the quantity of urine increased after irradiation, but the specific gravity either was reduced or remained the same. The authors reach the conclusion that in case of poisoning with mercury bichloride it is permissible to administer several small doses of roentgen rays as an adjuvant to the usual therapeutic methods but it cannot be expected to counteract the anuria with roentgen rays.

Analgesic Action of Roentgen Rays—Von Meszoly employed roentgen rays for analgesic purposes in 142 patients, thirty-seven of whom discontinued the treatment before completion. Of the remaining 105 patients, ninety-five had neuralgia and ten received roentgen treatment for postoperative pains. Of eleven patients with trigeminal neuralgia, eight were cured and two were considerably improved, while in one patient the pains recurred with their former intensity. Roentgenotherapy was resorted to only in the cases in which no pathologic processes were detectable that is in cases in which the neuralgia was idiopathic. The rays were applied to the lateral portion of the face on a field measuring 10 by 8 cm. The tension was 170 kilovolts and the filter consisted of 0.5 mm of zinc. From 400 to 450 roentgens was administered at one session. The doses were repeated at intervals of six weeks. Whenever the first treatment was not sufficiently successful, from 240 to 300 roentgens was applied to the site of exit of the nerve at the second or third session. The irradiation was usually followed by slight hyperemia, swelling and temporary increase in painfulness, but after that the improvement became evident. The author further reports his observations on sixty-seven patients with sciatica of whom forty-two were cured, eighteen considerably improved and five slightly improved while two were entirely refractory. Considerable improvement was obtained also in seventeen patients with other types of neuralgia (occipital, intercostal, brachial and so on). For the purpose of relieving postoperative pains roentgen rays were employed in four cases of appendectomy, in two cases of tonsillectomy and in four cases after tooth extraction. The pains disappeared after one or two irradiations.

Zeitschrift für Kinderheilkunde, Berlin

57 505 602 (Dec 12) 1935 Partial Index

- Studies on Cutaneous Turgor in Children J Jochims—p 516
 Studies on Carbohydrate Hormone of Anterior Lobe of Hypophysis in Blood in Case of Glycogen Storage Disease W Hertz—p 525
 Behavior in Mother and Child of Specific Ambceptor Against Bordet Gengou Bacillus C Bennholdt Thomsen—p 532
 Acidosis and Great Respiration in Toxicosis of Nurslings J Csapo and B Wolke—p 554
 Sex Ratio in Children's Diseases W Bonell—p 568

Sex Ratio in Children's Diseases—Bonell defines as sex ratio the number of male patients corresponding to 100 female patients. A sex ratio of 100, that is, an equal number of male and female patients, is comparatively rare. During childhood the exposure is practically the same for males and females and the differences in the incidence of children's diseases in boys and girls is primarily due to constitutional and predispositional factors. The author calls attention to the fact that androtropy or gynecotropy may eventually be simulated. This is possible if only the total number of cases of illness is considered, without paying attention to the ratio between males and females in the group of population that is under consideration. The author shows that there are some diseases the sex ratio of which undergoes apparent or real changes in that, for instance, their androtropism changes to gynecotropism that is, they are poikilotropic disorders. In considering the total morbidity, the author reviews an American and a Russian report. These reports indicate that during the first quinquennium of life, but particularly during the first year, the morbidity is greater in boys than in girls. In analyzing the figures the author found that this greater morbidity in boys changes to a greater morbidity in girls in America during the sixth year of life and in Russia during the eighth year of life. The author points out that most of the developmental anomalies (situated inversus, left-handedness, hernias, Hirschsprung's disease, congenital cardiac defects and so on) show a decided androtropism. In analyzing the acute infectious diseases, he admits that a strict differentiation into androtropic and gynecotropic infections is difficult; however, there is some evidence that in boys there is a predominance of the infections that have a neurotropic tendency whereas in girls there seems to be a predominance of those which have a dermatotropic tendency. Whooping cough is decidedly gynecotropic. Regarding rickets, the opinions differ considerably, some considering it androtropic and others gynecotropic. The manifestations of exudative diathesis are decidedly androtropic. The author also considers the sex ratio of the blood diseases and of several other disorders.

Zeitschrift für klinische Medizin, Berlin

129 137 362 (Dec 16) 1935 Partial Index

- Distribution Leukocytosis and True Leukocytosis F Hoff—p 137
 Investigations on Pathogenic Connection of Pernicious Anemia and Splenomegalic Polycythemia E Barath and J Fulop—p 172
 Influence of Bath on Intrapleural Pressure and Venous Pressure E Kruger and G Budelmann—p 178
 Clinical Aspects of Morbus Cushing K Horneck—p 191
 Electrocardiogram in Exophthalmic Goiter G W Parade and H R Foerster—p 198
 Observations in Porphyria K Hoesch and C Carrie—p 214

Pernicious Anemia and Splenomegalic Polycythemia—Barath and Fulop after calling attention to the importance of Castle's intrinsic factor in pernicious anemia, point out that Morris and also Hitzenger have suggested that an excess of Castle's intrinsic factor might play a part in polycythemic conditions. However, although it is highly probable that Castle's intrinsic factor is increased in patients with polycythemia there is as yet no definite clinical proof. Accordingly the authors decided to investigate the effect of the gastric juice of patients with polycythemia on the blood picture of pernicious anemia. They had under observation three patients with splenomegalic polycythemia who had erythrocyte values between seven and eight millions. The examination of the gastric function disclosed severe hyperacidity. In order to obtain their gastric juice for the treatment of five patients with pernicious anemia the polycythemia patients were given 200 Gm of beef and then a subcutaneous histamine injection of 0.5 mg. After that the gastric juice was withdrawn for from three to five hours the usual yield being from 500 to 600 cc. This gastric juice was filtered and neutralized and then administered rectally

to the patients with pernicious anemia in quantities of from 200 to 300 cc. These rectal administrations were repeated for several days until a total of from 800 to 1,400 cc had been reached. The withdrawal of the gastric juice from the polycythemia patients was continued for several weeks, so that there always was a supply. In five cases of pernicious anemia the erythrocyte values increased rapidly, while in a sixth case, which had been refractory to other therapeutic measures, only a slight increase in erythrocytes was obtained. The authors proved the efficacy of the gastric juice of polycythemia patients in the reticulocytic test on rats (K Singer's method). On the basis of their observations, they reach the conclusion that pernicious anemia and splenomegalic polycythemia are opposites. In the first condition there is a deficiency of the hematopoietic gastric substance, while in the second condition there is an excessive production of this substance. The withdrawal of large quantities of gastric juice following feeding with meat and subcutaneous injection of histamine has a favorable effect on polycythemia provided the treatment is continued for a long period. The authors concede that this treatment of polycythemia will probably not have a lasting effect.

Influence of Bath on Venous Pressure—According to Kruger and Budelmann, it has been determined that the venous pressure increases during bathing. They think that this increase is a result of the hydrostatic pressure. In this connection they point out that Schott determined that the intrapleural pressure increases under the influence of the hydrostatic pressure, and they maintain that this is a result of the compression of the thorax by the water. They decided to investigate to what extent this increase of the intrapleural pressure will explain the increase of the pressure in the extrathoracic veins and also whether this change in the intrapleural pressure during bathing may influence the venous backflow. They found that the hydrostatic pressure of the bath effects an increase in the intrapleural pressure. The volume of the intrapleural increase in pressure is determined by the height of the water column that stands above the thorax during bathing. The pressure in the intrathoracic veins (superior vena cava) and in the extrathoracic veins (jugular vein) increases together with the intrapleural pressure. The extent of the pressure changes in these veins is dependent on that of the intrapleural pressure change. The authors assume that the increased pressure in the extrathoracic veins (to the extent that they are within the region of the superior vena cava) is entirely determined by the intrapleural pressure changes and is not a result of the backflow. The intrapleural pressure increase during bathing, in case of equal hydrostatic pressure, is greater when there is no discharge of air from the lung.

Vrachebnoe Delo, Kharkov

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- Infection Therapy of Cancer F M Briker—p 827
 New Treatment of Leprosy Y P Rozental—p 835
 Carcinoma of Testicles in Children A I Iisanovich—p 839
 How to Regard Cancer of Neck of Uterus I L Okinichits—p 845
 Clinical Diagnosis of Congenital Atresia of Biliary Tracts P M Vitlina and F A Revis—p 865
 Symptoms of Primary Lymphogranuloma of Mediastinum P P Litova—p 867

Treatment of Leprosy—According to Rozental, this treatment was introduced by Gordon A Ryrie and consists of intravenous injections of aniline dyes that exhibit a selective affinity for the leprosy lesions. The immediate effect of this chemotherapy is an intense bluish discoloration of the leprosy lesions. Lesions containing bacilli are discolored more than those containing none or a few. The more intensely discolored lesions undergo a more rapid involution. Patients complain of an intense itching of their leprosy lesions on the same or the following day after injection. There may be a sense of intoxication, general malaise, dryness of the mouth and mild sweating. Because of varied response the treatment must be strictly individualized. The author treated thirty-one patients in all stages of leprosy, using a 0.5 per cent solution of brilliant green or a 1 per cent solution of methylene blue. The dose ranged from 5 to 30 cc and was repeated every five or six days. Seven patients were rendered bacillus negative within two months, while the rest showed a marked diminution in the number of the bacilli and an improvement in the ulcerative lesions. The author did not observe any untoward effect on the kidneys.

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FUNCTION OF THE HOSPITAL IN THE TRAINING OF INTERNS AND RESIDENTS

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Hospital Internships and Residencies

NEW YORK

Modern medical education requires a comprehensive program covering the entire professional life of the physician. To be effective, each step must be planned for the years as medical student, as resident staff member, and in practice. Viewed in this light, the internship and residency seem pivotal in the whole scheme of things. Certainly to an extent equal to the four years in medical school, the hospital service plays a vital part in conditioning the young physician in methods of approach to his patient's problem, in modes of treatment and in general ideals of practice.

It has become increasingly apparent to medical educators, however, that the training furnished house staffs is often not as effective as it might be. Disquieting reports drift back to the medical alma mater, dissatisfactions are voiced by hospital intern committees with the type of preparation their candidates have received, and intern groups themselves have become increasingly conscious of essential elements missing from their training.

The whole question is one of such complexity, with so many intricate factors woven into its fabric, that it has been extremely difficult to know where to make a beginning. Medical colleges have repeatedly carried out searching self criticism of their methods and accomplishments, which have resulted in great improvement in the quality of their graduates. It is logical, therefore, that the next step should be a similar critical analysis of medical education as it is applied during hospital residence. During this period, the value of college teaching is put to the test and it is needful for medical faculties to extend their interest and knowledge definitely into the intern years.

The Council on Medical Education and Hospitals has presented the problem squarely, has made hospitals realize that minimum standards exist and has been a far-reaching stimulus for improvement.

The five boroughs of New York City present peculiar advantages for initiating a cooperative medical college-hospital survey. In this compact and densely populated area are found seventy-nine general and special hospitals approved by the American Medical Association at the present time. Their house staffs total more than 1,600 individuals representing approximately one

sixth of the number in the United States. When additional groups serving in unapproved hospitals and suburban areas are included, the total will approach 2,000. All types of experience are among the opportunities offered. As a result of the many openings available, graduates of about 90 per cent of American medical colleges, as well as large numbers of Canadian and European schools, are represented. A preliminary study of one half of the group revealed the fact that 55 per cent were graduates of other than the five medical colleges of New York City.

For some years the Committee on Medical Education of the New York Academy of Medicine and the deans of Columbia, Cornell, Long Island, New York Homeopathic and New York University medical colleges have been carrying on independent studies of internships and residencies in local hospitals. Finally in 1934 a joint committee was organized and through a substantial grant from the Commonwealth Fund a two year project for careful examination of every hospital in the metropolitan area was made possible. This plan included visits to neighboring medical centers also. The investigation is still in progress and its conclusions will not be completely available until some time after July 1 of this year. Needless to say, the work would not be possible without the cordial cooperation of the hospitals involved, and this has been freely given. They have also furnished representatives for service on the subcommittees dealing with different phases of the general problem.

The results of the survey are made available to each hospital for its information and guidance. These informal follow-up reports have resulted in frequent beneficial changes in the house staff situation.

OBJECTIVES OF COMMITTEE

To sum up the plans of the committee in general terms its objectives may be outlined as follows:

1. A systematic and thorough study of internship and residency training as applied in a large, representative area.
2. Through information thus received, to clarify our minds as to what place the house staff experience should have in the general plan of medical education.
3. To arrive at some evaluation of the methods now in use, designed to qualify the physician for different types of practice.
4. To supply educational institutions and hospitals with adequate data vital to their individual needs.
5. To act as a clearing house of information through which the schools and hospitals may benefit from the experience of others.

The knowledge obtained in one and a half years of effort makes us hopeful that these objectives are obtainable and that a great deal of constructive work will be done. While incomplete information makes definitive statements not yet possible, it is my purpose in this paper to discuss some of the difficulties encountered and feasible remedies.

PROGRESS OF INTERN

Perhaps the simplest method of approach is to chart the progress of the intern from the beginning of his service, asking ourselves a series of questions along qualitative lines

1 Is introduction to medical duties and responsibilities systematically provided?

2 On beginning his duties in the emergency room and on the ambulance, is instruction given in minor surgical technics and first aid?

3 Is attention paid to adequate grounding in ward technics as dressings, spinal punctures, clyses, venipunctures and examinations of body orifices, or must the intern learn them by practicing on the patient?

4 Are nursing procedures outlined and demonstrated to the intern, so he may appreciate and supervise them properly?

5 Is he introduced to the operating and delivery room with the same care as is a pupil nurse?

6 At the bedside, are his observations given serious attention at the time of regular rounds?

7 Is an outline for keeping medical records taught?

8 Is there a tradition for the intern to summarize his observations and present them effectively both at rounds and at the regular departmental conferences?

9 Are laboratory tests carried out as meticulously as in medical school and are they performed in connection with study of an individual patient?

10 Is reading of medical literature stimulated?

11 Does an appreciation exist of the patient as an individual and of the importance of social, psychologic and spiritual factors in health and disease?

12 Do the members of the attending staff comprehend their responsibilities as preceptors and take a personal interest in the objectives of each intern entrusted to their care?

13 Is a method for systematic appraisal of the intern's work carried out?

Another mode of approach is to trace the contact of the intern with the patient throughout the latter's hospital experience. Osler once said that the only way to learn medicine was from a textbook but that the only real textbooks were individual patients. Logically, if the intern is to become familiar with the natural history of disease he must study the patient during the preliminary period in the dispensary or emergency room, while the diagnosis is being established and therapy applied in the hospital and then the evaluation of results at follow up.

Finally, it is most desirable that an appraisal be made in terms of objectives. Is the group being trained to meet the needs to be encountered in practice?

DIFFICULTIES AND SUGGESTIONS FOR MEETING THEM

It is not possible within the limits of this paper to discuss all these problems, nor is our committee yet prepared to give definite answers. However, certain major difficulties may be indicated and probable lines along which solution may be sought.

I will take up the first question asked, that of introduction of the intern to his work. Dr Wyckoff, in his discussion mentioned the internship as an experience involving increasing responsibility. To be effective this must be definitely planned for.

Systematic outlining of the intern's duties and supervision of his introduction to them has been provided in only a few hospitals. Frequently this function has been left to the casual attention of a resident, an older intern, the charge nurse or a member of the attending staff, as problems arise. During the first few months of his service, the intern is eager for instruction, has not become fixed in bad habits and can be molded to sustain high standards. It is the most critical period

Analysis of Case Load

Service	Basic Data				Ratio of House Staff to			
	House Staff	Beds	Average Daily Census	Admissions 1934	Beds	Average Daily Census	Admissions 1934	
Voluntary General Hospital, Without Ambulance Service								
Total	9	127	84	2 420	1 14	1 9	1 260	
Surgery	2	24	30	935	1 12	1 15	1 467	
Medicine	3	13	12	266	1 4	1 4	1 89	
Pediatrics		24	11	262	1 12	1 8	1 84	
Obstetrics	2	37	27	857	1 18	1 13	1 425	
Cancer	1	6	4	100	1 6	1 4	1 100	
Voluntary General Hospital With Ambulance Service								
Total*	12	110	84	2 701	1 9	1 7	1 235	
	9				1 12	1 9	1 300	
Surgery	4	36	47	1 654	1 9	1 12	1 413	
Medicine	2	17	20	437	1 8	1 10	1 918	
Pediatrics	1	11	7	191	1 11	1 7	1 191	
Obstetrics	1	16	7	253	1 16	1 7	1 233	
Gynecology		6	3	186	1 6	1 3	1 186	
Voluntary General Hospital With Ambulance Service								
Total†	6	102		2 499	1 17		1 416	
	4				1 25		1 675	
Surgery	3	33		1 429	1 18		1 476	
Medicine	1½	12		383	1 8		1 250	
Pediatrics		12		135	1 8		1 90	
Obstetrics	1½	25		547	1 17		1 365	
City Hospital With Ambulance Service								
Total‡	129	2 575	2 437	41 208	1 20	1 19	1 319	
	126				1 20	1 19	1 327	
Surgery	34	590	524	12 154	1 17	1 15	1 357	
Medicine	34	540	570	9 690	1 16	1 17	1 285	
Tuberculosis	3	200	140	1 457	1 67	1 47	1 486	
Pediatrics	11	290	338	2 113	1 26	1 31	1 192	
Ophthalmology and Otolaryngology	5	75	67	3 410	1 15	1 13	1 634	
Urology		80	62	1 255	1 10	1 8	1 157	
Gynecology	16	150	123	3 035	1 9	1 8	1 190	
Obstetrics		120	109	2 798	1 8	1 7	1 175	
Orthopedics	5	150	141	532	1 30	1 28	1 106	
Dermatology	2	130	111	1 432	1 65	1 56	1 716	
Neurology	3	250	250	3 323	1 83	1 83	1 1105	
City Hospital, With Ambulance Service								
Total§	63	1 367	1 611	11 495	1 22	1 25	1 182	
	59				1 23	1 27	1 19	
Surgery	7	136	193	2 147	1 19		1 207	
Orthopedics	2	76		526	1 33		1 307	
Otolaryngology	5	18		1 010	1 3		1 202	
Ophthalmology		5		101	1 1		1 20	
Urology	3	52	56	603	1 17	1 19	1 250	
Dermatology		43	25	149	1 14	1 9	1 50	
Gynecology	6	22	24	493	1 4	1 4	1 82	
Obstetrics		76	59	1 754	1 13	1 10	1 292	
Medicine	10	231	424	2 377	1 23	1 42	1 238	
Pediatrics and Children's Surgery	7	242	206	1 420	1 34	1 29	1 203	
Neurology	3	178	204	205	1 59	1 68	1 68	
Tuberculosis	7	270	417	710	1 33	1 53	1 101	
City Hospital With Ambulance Service								
Total	29	441**	477	13 543	1 15	1 16	1 467	
	22				1 20	1 22	1 616	
Surgery	8	239	280	7 671	1 29	1 35	1 959	
Medicine	8	103	133	3 255	1 13	1 17	1 407	
Pediatrics	2	39	24	701	1 20	1 12	1 350	
Obstetrics	3	39†	40	1 916	1 13	1 13	1 637	

* The upper row includes three interns on ambulance
† The ambulance service is covered by two of the six interns serving on twenty four hour shifts. The lower figures exclude the interns on ambulance

‡ The upper row includes three interns serving on ambulance

§ The upper row includes four interns serving on ambulance

¶ The total includes eighteen beds in the admitting ward

** It was not possible to allocate the average daily census to the first four services 1934 represents the total

† The upper row includes three regular interns serving on ambulance and four one year interns who cover ambulance pathology and x-ray

†† The total includes twenty one beds assigned to accident, isolation and prison cases

†† Capacity can be increased to fifty one

of the entire house staff experience and probably of the whole plan of medical education. Besides his urgent need of learning to carry out techniques carefully and skilfully he needs active guidance and appreciation from his elders in his efforts at diagnostic studies. Too often a painstakingly recorded history and physical examination are ignored, and a bad example of snap judgment as to diagnosis and treatment is given by a hurried member of the visiting staff. Very frequently no attempt has been made to define and outline the content of acceptable case records, and to the record librarian has been delegated the impossible task of editing these reports. Such irregularity makes utilization and checking by the attending staff difficult and it encourages careless habits and short cuts. Conversely, where uniformity exists there is increased interest in the interns' work, habits of exact observation are encouraged and there is stimulation for clinical investigation. While the task is a tedious one the only first class records are seen where the chief of the service takes personal responsibility for enforcing standards. In the majority of instances the interns are left too much to their own devices under the comfortable assumption that if sufficient initiative and interest are displayed adequate instruction will be given.

If standards are to be set the proportion of interns to patients must be properly adjusted. As Dr Zook has so ably stated there is need of proper balance of qualitative and quantitative criteria. The usual method of estimating case load by calculating the ratio of house staff to beds is far from accurate in revealing the actual picture. Great variation exists in bed occupancy. The presence or the absence of an ambulance service makes a vast difference in the number of interns who are available for work in the hospitals. The ratio for the entire group does not portray the difference between services.

If future needs in practice are considered it is necessary to visualize what conditions our graduates will be asked to face. Since all may presumably enter general practice, such needs must be first considered. According to the Final Report of the Commission on Medical Education, the ten most frequent demands on the general practitioner are

- 1 Infections of the upper respiratory tract
- 2 General medical diseases
- 3 Minor surgery
- 4 Gastro intestinal disorders
- 5 Obstetrics
- 6 Venereal diseases
- 7 Throat infections
- 8 Pneumonia
- 9 Contagious diseases
- 10 Ear, nose and sinus infections

Even brief consideration reveals why so many interns are ill fitted to enter their careers. Few have any experience in dealing with contagious diseases or venereal problems. Facility may have been acquired in tonsillectomy but little skill obtained in the diagnosis and care of otitis media, sinusitis and various throat infections. Pneumonia may be well handled but without much idea of what to do for the common cold. A vast amount of time is usually spent in assisting with major surgery but little instruction is given in minor surgical technique. Some hospitals offer no obstetrics at all and many in insufficient amount. Physical therapy is applied in general practice is a neglected field. There is a pressing need for a shift from almost complete emphasis on the curative and technical aspects

of medicine to include training in the widening field of preventive medicine and public health.

Too often our hospitals move and have their being in a small cosmos of their own. Objectives for the house staff do not reach beyond the limits of the hospital walls. The cloistered existence of the intern gives him little opportunity to select for himself the training that will best fit him to serve the community.

Practical suggestions for meeting hospital deficiencies must be guided by the abilities and capacities of each institution to carry them out. Both city and voluntary hospitals are struggling with serious financial limitations. Changes involving additional expenditure can be undertaken only after consideration of ways and means. In private hospitals it is desirable to have at least 50 per cent of the patients in the general service if teaching standards are to be upheld. Reginald Fitz has pointed out that in Massachusetts the quality of the house staff group in voluntary hospitals was usually directly proportional to the amount of endowment.

A voluntary attending staff cannot be expected to spend additional hours in teaching if its members already are barely making a living.

The solution, therefore, appears to be in organization and systematization of present resources and facilities. A few illustrations to show my meaning will be given.

1 The preparation of manuals by some of our better hospitals specifying the basic essentials for adequate care of the patient could be extended to others with great benefit, particularly those in which the attending staff rotates on duty. Such a manual has been in use for several years in the Third Medical Division of Bellevue Hospital. It is of especial value in that it provides training for the staff in both general and special medical methods. Being frequently revised, its educational influence is profound. The surgical service of the Peter Bent Brigham Hospital in Boston has an admirable booklet, both in spirit of conception and in content. It serves as joint guidance for both the medical and nursing staffs. Books of nursing procedures are found in the wards of all our hospitals, designed to anticipate the doctor's needs. A curious omission is that of a complementary book to teach the interns how to use the nursing provided.

2 In the January issue of *Hospitals* is an article by Dr Emanuel Giddings of the Morrisania Hospital describing experiences in teaching interns nursing procedures. Participation is given in such practical and homely matters as how to make a patient comfortable in bed, how to prepare and apply a mustard paste and how to make up and give various types of enemmas.

3 Regular, separate departmental conferences are a basic essential. The residents and interns take an active part in preparation for these meetings and receive some of their best education as they participate. An unfortunate tendency has been to hold one conference for the entire hospital with crowding of the house staff into the background. The attempt to cover statistics, mortalities, morbidities, interesting cases and pathologic material for all services in a single hour's time is a physical impossibility.

4 If the intern is to follow his patient throughout the course of his illness a definite provision must be made for regular assignment to the dispensary. There is a growing tendency to set up a half or full time schedule over a period of weeks or months. Supervision is furnished in part by the senior members of the attending staff. There is no reason why all interns may not regularly have their place at follow up.

The training possible in the various special clinics of the outpatient department is of utmost practical value and cannot be duplicated in the wards.

5 The reason why so many hospitals lack a satisfactory library has been their inability to finance a full time librarian. An ideal arrangement, when architecturally possible, has been to place the reference and record libraries in connecting rooms or suites, with the record librarian in charge of both. Another plan has been to place a full time employee, as the anesthetist or the operating room secretary, in control. Both methods have been tried and have been successful. With this basic essential, books and periodicals have been freely provided by members of the staff and their friends. Weekly journal clubs can then be organized which are of far-reaching influence on reading habits.

The lack of adequate libraries in some hospitals in the past has been the chief reason for provincialism, unscholarly habits and unprogressiveness.

Nothing has been said up to this point of formal lectures. This has been intentionally left to the last. Too often, when intern training has been considered, the first impulse has been to plan a series of lectures. Very frequently these have failed of their purpose. An arbitrarily arranged curriculum is about as interesting as the routine perusal of a textbook. In hospitals without medical school teaching services, the best substitute seen has been the organization of a weekly seminar by the interns themselves. The speakers invited and the topics discussed are interesting to the interns, as they deal with problems encountered in the hospital.

In conclusion, I would venture the assertion that our hospitals must face the need of a more adequate basic internship. Judging from the thousands of young men who come to New York from all parts of the United States and Canada for additional hospital training, it would appear that the one year rotating internship most of them have obtained is insufficient for their needs. As already mentioned, more than half of the house staff group is drawn from sources outside the city. It will perhaps be surprising to some that a preliminary poll of our metropolitan intern population indicates a desire among most of them for a three year house staff experience. Nor is this wish based on the expectation that such a length of service will turn them out as qualified specialists. It will merely fit them for the needs of modern general practice with extra training in one field.

The function of the resident or fellow is manifold. He furnishes continuity of program in upholding standards, supplements necessary instruction of interns, and carries out special studies. His progress toward specialism depends on the number of years spent.

The criteria formulated by our national boards of specialization have already had a marked effect not only in lengthening and improving existing residencies and fellowships but in stimulating the creation of new ones.

It appears that the method of preceptorial training in a private office or by progression on the special staffs of hospitals is not going to satisfy the needs of the future.

To give the house staff experience its proper place in medical education, a larger number of attending staff members with a teaching interest must be provided. Osler once remarked that "a good teacher was a man who could think, could express himself, and had well developed technique." To this he added the essential qualities of "enthusiasm, that deep love of a subject that desire to teach and extend it without which all

instruction becomes cold and lifeless, and, secondly, a full and personal knowledge of the branch taught, not a second-hand information derived from books."

Such an ideal cannot be attained without thorough and intimate study of every patient encountered. If each attending staff member will set for himself the goal of thorough supervision of his interns in the carrying out of essential case studies, he will reap the reward of a profound understanding of medicine. Perhaps the best way to understand a subject is to teach it. In the last analysis, by setting high standards for our interns and living up to them ourselves, the fundamentals of an adequate teaching program are achieved.

The spirit of progress is not evolved from a consideration of abstract ideas, but from living, moving forces, swelling from beneath the surface, which give birth to new methods and courses of action, impelled by the necessity of meeting the growing needs of mankind.

It is imperative that medical groups throughout the country intensively study their own local problems. The zeal and dynamic for their solution must come from within each hospital community. Only thus may the American Medical Association be given proper support in its nation-wide task.

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INDIVIDUALIZATION IN THE PRESCRIPTIONS FOR NURSING CARE OF THE PSYCHIATRIC PATIENT

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It is my purpose in this paper to describe the method that my associates and I have evolved to meet the problem of individualizing the prescriptions for nursing care of the psychiatric patient in the hospital. Physicians directing the recovery processes of the mentally sick are constantly confronted with the problem of controlling and organizing the patient's time during the intervals between personal contacts. With an average of fifty patients, under the supervision of ten full time physicians, it has been possible at this clinic for a physician to spend between thirty and sixty minutes daily with each patient. We consider it to be our opportunity as well as responsibility, however, to prescribe and supervise the management of the patient during the remaining twenty-three hours of each day, necessarily through the aid of therapeutic assistants, i. e., nurses and special therapists.

The therapeutic conferences with the physician may color the patient's reactions and behavior, but the effect of the physician's work may be neutralized or even counteracted unless a prescribed management and a program of activities can be effectively carried out by these nurses and therapists, and their work closely supervised and repeatedly checked.

The present plan has evolved gradually over a period of several years and can be roughly divided into three phases. We first found it necessary to develop an organization of assistants, all of whom were therapists of a special sort and not merely bed makers or keepers of the keys. It was necessary not only to use extreme care in selecting the personnel but also to teach them the fundamentals of psychiatry, that we might thus

From the Menninger Clinic
Read before the Central Neuropsychiatric Association, Topeka, Kan.
Oct. 25, 1935.

inculcate in them a psychiatric point of view. It became essential to give them some general understanding of psychodynamics, in addition to the outlines of descriptive psychiatry, and to teach them the important concepts of psychiatric nursing implied in such familiar phrases as "sympathetic understanding," "eternal vigilance" and "patient perseverance." Only through special training could we help them attain an objective, nonemotional attitude and impersonal behavior.

The second step in the evolution of our method was to develop a system by which we might convey to the carefully selected, psychiatrically trained group of assistants an individual prescription for each patient of the special activities which this corps of assistants might lead or direct.

The third step was to work out a plan to coordinate these prescribed activities, to supervise their execution and to measure their effectiveness as therapeutic measures.

SELECTION AND TRAINING OF PERSONNEL

Our choice of personnel is based initially on the individual's intelligence, his interest in the field, and the stability of his personality, but even though he is interviewed by several members of our staff it is not always possible to judge these factors accurately without a practical trial. The requirement that our nurses be graduates of an accredited general hospital training school and that our therapists and male attendants have some college training usually insures an adequate intelligence.

Each individual is requested to furnish an explanation of his desire to enter the field of psychiatry. We have found that it is impossible to carry out an effective therapeutic program with attendants who, even though intelligent, are working merely to make a livelihood and have no deeper interest in their jobs, or with persons who go into psychiatric work in an attempt to solve their own neurotic difficulties. The stability of the personality is far more important than its particular makeup. We have found it expedient to have various types of personality included in our personnel. *e.g.*, the maternal nurse may be especially successful in the management of an infantile personality, through her soothing solicitude, her comforting voice and her maternal attitude of protection. A schizoid individual may succeed in obtaining the cooperation of schizophrenic patients in many instances in which a more extroverted nurse fails. The firm and domineering type of personality may be of special advantage with the "spoiled child" type of patient. Regardless of the type of personality, the character trait of stability, which may be evaluated roughly from a social history giving facts about the home situation, the scholastic record and vocational experience, contributes largely to success in psychiatric therapy.

We must depend on our personnel to create a friendly and secure environment. We expect a nurse to be a confidential friend of the patient and a companion in recreational and occupational activities. She must be a diplomat in handling actual difficulties that arise concerning treatment and privileges. Finally, she must be the doctor's chief observer of the patient's behavior and at the same time be capable of charting it intelligently and accurately. But one can expect none of these functions on the basis merely of her native intelligence, her enthusiasm and her emotional stability.

To enable the nurse to carry out this difficult assignment of functions she must have psychiatric knowledge. She must have a functional and not merely a

theoretical understanding of psychodynamics. She must know not only the methods used in the therapeutic management of each type of mental illness but the reasons for them. It is necessary to teach her the various difficulties she may encounter and their solution and the rationale. She must be taught that the companionship or friendship prescribed for the mental patient can and must be scientifically controlled. She has to be taught what to observe in the patient and how to record it. Probably the most important lesson in her training is to become objective and nonemotional and yet at the same time remain sympathetic, friendly and understanding in her relationships to patients.

In our experience we rarely have found an individual who was able to carry out these functions entirely to our satisfaction on the basis of previous training. For this reason we established a training school with a prescribed course of three trimesters running continuously. There is a wide variation in the schools of thought and actual practice in psychiatry, and it is important that our personnel understand our attitude and practice. For this reason, each senior member of the medical staff gives lectures in this training school as do also the heads of the occupational, recreational and physical therapy departments, as well as the nursing instructress. Regardless of previous training, each new nurse and therapist, and even the secretarial help, take this didactic work.

The work of the first trimester is devoted to a presentation of fundamentals. The course in psychiatry is largely devoted to psychodynamics, including mental mechanisms and types of personality. Psychiatric nursing covers the application of these theories to practice in such fundamentals as precautionary methods, the explanation and interpretation of the physician's prescriptions, and routine procedures. A course in neurology is given to orient further the nurse in its relation to psychiatry, as well as for its practical application in the neurologic syndromes frequently seen.

In occupational therapy and physical therapy the nurse is given both theory and practice. In recreational therapy she learns not only theory but also a large variety of recreational activities. The first three months' work includes a total of 120 hours of lecture and recitation work, which amounts to nine hours of classroom work each week.

The work in the second trimester is planned to include a dynamic as well as a descriptive study of the more common mental illnesses and, in addition, the principles of clinical psychology and child guidance. Each student is required to make case studies and to write book reviews. The work includes a total of sixty-six hours of lecture, an average of five hours a week.

By the third trimester it is assumed that the nurse is oriented sufficiently well in psychiatry to profit from a course in psychoanalytic theory. We regard this subject as of paramount importance in part because many patients in the hospital are under psychoanalytic treatment and also because our actual practice as far as possible is based on an analytic understanding of the patient's problems. In addition, the nurse is given the opportunity to write a research thesis to encourage the expression of her own originality, as well as to increase her familiarity with the literature and the use of the library. Other lectures deal with ward management and special psychiatric hospital problems. This course in psychiatric nursing has been approved by the State Board of Nurses' Registration and is accepted by Washburn College for ten hours of college credit.

THE PHYSICIAN'S PRESCRIPTIONS

With all this training the nurse or therapist is still not informed with regard to the program of treatment for the individual patient until the physician has written his prescriptions. We have found it necessary in making prescriptions to include not only some information about the patient himself and suggestions for special activities but also the more subtle recommenda-

That the explanation of our order sheet may be more understandable I shall illustrate its application by the case history of a patient. We obtained the following history from the patient and his brother just prior to his admission to the hospital. He was an intelligent business man 42 years of age, whose chief complaint was an assortment of hypochondriac ideas, associated with anxiety and compulsive behavior, beginning

Admission Orders at Menninger Sanitarium

Orders for (Patient)	Date	Ordered by	Alone	In Group of 3-4
Tentative Diagnosis	Occupation			
Outstanding Symptoms				
INDICATE ORDERS BY UNDERLINING THE APPROPRIATE WORDS IN THE FOLLOWING ORDERS This is to be given to the nurse in charge immediately on admission I GROUP N R GP P Special Precautions				
II ATTITUDES TO BE ASSUMED (By Nurse) 1 <i>General Attitude toward Patient</i> Watchfulness Reassurance Praise Solicitude, Friendliness Companionship Much Attention Little Attention Firmness Persistence Indulgence 2 <i>Toward Privileges for the Patient</i> No Exceptions Slightly Indulgent Encouragement Dis- couragement 3 <i>Toward Questions Regarding Restrictions</i> Explain Refer to Doctor Ignore Queries Listen attentively but without comment 4 <i>Toward Requests from the Patient</i> Ignore Minimize Refer to Doctor Refuse with Explanation Encourage Evade Grant when Possible 5 <i>Toward Requests Made of the Patient</i> Matter of fact Persuade Persist Humor Demand without Force Show of Force Threaten Use Force Reward 6 <i>Toward Issuance of Invitations to Patient</i> Give no Invitations Matter of fact Solicitousness Persu- sion Persistence 7 <i>Complaints</i> Solve where Possible Divert Attention Report Explain Ignore Discourage Listen sympathetically without comment Make light of				
III HOSPITAL MANAGEMENT 1 <i>Responsibilities given Patient in Hospital</i> None Care of Room Assist with Ward work Ward Sewing Circle Responsibility for a daily task May Shave Himself Under Supervision May have cosmetics in room 2 <i>Relationship to Other Patients</i> Isolation Provisional Participation Voluntary Social Rela- tionships Encourage Social Relations Discourage Social Relations Encourage a protective interest in 3 <i>Therapeutic Aims</i> —To provide sublimation —To afford means of —To afford outlet for —obtaining love —aggressions —To give freedom for —To provide means of —phantasy expression —identification —To afford opportunity to —To permit propitiation —create of guilt 4 <i>Spending Allowance (all purposes)</i> per week per month				
IV PHYSIOTHERAPY <i>Type</i> 1 <i>Tonic</i> (Warm sheet pack autocondensation ultraviolet talc rub alcohol rub infra red light) 2 <i>Sedative</i> (Wet sheet pack neutral bath) 3 <i>Stimulative</i> (Fomentations salt glow needle spray Scotch douche massage) 4 <i>Eliminative</i> (Sitz bath hot bath cabinet bath) <i>Therapist's Attitude</i> Invite Urge Inst Compel				
V BIBLIOTHERAPY <i>Type</i> Newspapers Magazines Illustrated Papers Books Fiction Poetry Mysteries Biography History Mental Hygiene Technical Books Travel				
VI EDUCATIONAL THERAPY Ball room dancing Design Interior Decoration Journalism Mechanical Drawing Music Appreciation Nature Study Shorthand Typing Sketching University Extension Courses				
VII RECREATIONAL THERAPY <i>Large Group Time</i> <i>Type Indoor (Inactive)</i> Card games Table games Bowling Dances Ping Pong Medi- cine Ball Punching Bag Stationary Bicycle <i>Outdoor (Mild)</i> Shuffleboard Walks Baseball Golf Hikes Horseshoes Swimming Tennis Basketball Foot- ball Volley Ball Ice Skating <i>Special</i> Archery Horseback Riding Church Marionettes Dances Picnics Dinner in town Shopping Tours Dramatics Shows Forum Tars <i>Therapist's Attitude</i> Stimulate Interest Invite Urge Insist Compel				
VIII PROJECT WORK Carpentry Cement Work Electrical Farm Work Garden Mechanical Work Yard Work Individual Project Sugges- tion				
IX OCCUPATIONAL THERAPY <i>Children (age set)</i> In room At Shop Length of work period <i>Finances permit</i> \$1.3 per mo. \$3.5 per mo. \$5 or more per mo. <i>Projects for Therapists</i> Hospital Relatives Self <i>Outstanding interests or hobbies</i> <i>Give project offering opportunity for</i> Aestheticism Concentra- tion Hobby Formation Imagination Initiative Intricacy Routine Simplicity Strenuous work <i>Crafts</i> Art Metal Drawing Pottery Basketry Furniture Construction Scrap Books Batik Hooked Rug Work Tapestry Weaving Book Binding Knitting Water Color Cabinet Making Leather Craft Painting Clay Modeling Linoleum Block Printing Weaving Cooking Literary Work on Chart Wood Carving Crocheting Needlework Wood Turning Domestic Science Painting Wrought Iron <i>Therapist's Attitude</i> Stimulate Interest Invite Urge Insist Compel				
X MEDICATIONS Sedative Laxative Tonic Others <i>Nurse's Attitude</i> Explain Make No Comments Report Requests to Doctor Urge Insist				
XI DIET Fray Dining Room Tube-feeding Between meal nourishment Regular Light Extra Servings Omit <i>Special Diets</i> Diabetic Diet Liquid Fat free diet for Liver Dis- Nonirritating residue free eases diet General Obesity Diet High Caloric Purine Free Diet High Residue Diet for Consti- Salt free nephritic Diet pation Sippy diet for Ulcer Crises High Vitamin Diet Soft Karezl Diet Ketogenic Diet Needs Dietary Instruction Give Silverware Give Chinaware Porcelain Beeware Paper Plates				
XII SPECIAL ORDERS Basal Metabolism Renal Function Test Diathermy Treatment Spinal Puncture Encephalography X ray Dextrose Tolerance <i>Special Note</i>				

tions of the attitude the nurse should take toward the patient's complaints and the manner in which she should make her requests of the patient. Our admission orders comprise three full sheets of detailed instructions (shown in the accompanying tabulation). In addition to giving a tentative diagnostic grouping outstanding symptoms occupation and family situation the orders cover twelve special categories of prescribed attitudes and activities. In writing the prescriptions it is necessary only to underline on these order sheets the desired attitude or activity.

approximately 1 year prior to consulting us. At the age of 9 years he had an anxiety attack of some months' duration because he was afraid he might die of scarlet fever which was then affecting another member of the household. At the age of 21 following a minor abrasion on his thigh he feared that he might lose his leg. At the age of 29 he had a tonsillectomy, which was associated with a great fear of death. At the age of 39 he developed a profound emotional reaction at the time of a gallbladder operation. At the age of 41, a friend died of angina pectoris and he developed a severe car-

diophobia His present illness began with anxiety over paresthesia in his hands but rapidly increased to include concern about his heart and his general physical health. He had himself examined in several clinics and put himself through the gamut of every type of clinical and laboratory investigation. Physical and laboratory examinations from these clinics were reported to be entirely negative. He became depressed and tearful, took his pulse and temperature regularly, and developed an intractable insomnia. From his brother's point of view he had always been an extremely self-centered individual. He had always dominated the home and had been pleasantly unkind and inconsiderate of his wife and their four children. One month prior to the onset of his present illness his son joined him in his business.

It will be noted from the tabulation of the order sheet that our orders are divided into twelve sections and individualization in prescribing is possible because of an extensive variation of possibilities in each section. Based on the historical data the prescriptions for our patient were written and I will discuss his specific orders section by section and thus illustrate the application of this plan.

In the first section, which sets forth the privileges permitted the patient, he was given "restricted privileges." Because he had come voluntarily it was felt unwise to give him "no privileges," but because of the anxiety present it was felt equally unwise to give him either freedom of the grounds or permission to go to the city alone. In addition, the order indicated to the nurse that she was to take "special precautions," which is our code language for specific precautions against suicide. While the patient's history indicated no suicidal attempt, it is our policy to take such precautions in each instance in which the history indicates or the patient himself exhibits depression or anxiety.

The second section is devoted to prescribing the attitudes to be adopted by the nurse toward the patient. In the instance of our patient the nurse was instructed to watch him closely, primarily because of a history of indecision and unexpected behavior. She was instructed to be reassuring in her manner and at the same time firm since with anxiety reassurance and firmness are always in order as a necessary support to the weakened and indecisive ego. She was instructed to be slightly indulgent in the interpretation of his privileges, since he had come voluntarily and too rigid a regimen of supervision in this type of individual is always provocative of further rebellion, without therapeutic benefit. The nurse was instructed to refer his questions regarding restrictions as well as any major requests to the physician, this order was indicated because of his superior intelligence and the neurotic rather than psychotic nature of his illness. She was ordered to make requests of him initially in a matter of fact manner, and if necessary to persist in them but without demanding or humoring, or any other method that it is possible to indicate in the orders. Invitations to participate in recreational and other therapeutic activities were to be extended in a matter of fact manner. Complaints that he made were to be listened to in a sympathetic manner, but without comment since it was expected that he would make many complaints stimulated by his fears about himself.

It can be seen from these order sheets that the possible variation in these initial attitudes is very large, and each of the terms used is defined and presented with an explanation and discussion in the course in

psychiatric nursing, and further reviewed in therapeutic seminars for the nursing supervisors and therapists. Consequently, they are actually only abbreviations for an elaborate concept and actually represent a system of management.

In the third section of the orders devoted to practical points of management of the patient in the hospital, this patient was assigned a daily task, to be selected by the nurse, with the aim of immediately giving him a minor responsibility. In addition, it was indicated that he might shave himself under supervision, an order which is ordinarily something of a contradiction to suicidal precautions. Our patients are permitted to shave only with safety razors and in this instance it was felt that the patient's hearty cooperation would be jeopardized by forcing him to go to the barber shop in the hospital to submit to being shaved. The nurse was further instructed to encourage his socialization which indicated to her that she was to introduce him to each of the other guests and to encourage him to sit in the living room instead of keeping him in his room alone, or leaving him to his own inclinations. There was much evidence in our patient's history of underlying hostile attitudes and on this basis the therapeutic aim indicated on the order sheet was "to afford an outlet for his aggressions." This was done by allowing him to express himself freely, which he did in his verbal attacks on the nurses and in his protests against any sort of restriction despite his repeated affirmations of cooperation.

In physical therapy the patient was ordered to have a tonic type of treatment including ultraviolet rays, massage, and salt glows, and the therapist was instructed to invite and if necessary to urge his compliance. We have found it desirable to prescribe physical therapy for nearly every patient, in part for its physiologic and in part for its psychologic effect. We prefer the sedative effect of continuous baths and wet cold sheet packs to excessive chemical sedation, and undoubtedly there are beneficial tonic and eliminative effects from the other physical therapy measures used. Our case serves as an excellent illustration of the importance of the psychologic effects, namely, the personal attention and physical manipulation which we believe were probably more beneficial than the physiologic effects, judging from his enthusiastic comments and overvaluation of the procedure.

In bibliotherapy the initial order for our patient called only for the daily newspaper. An early revision however added mental hygiene literature. Following the early psychotherapeutic conferences with the physician it was believed that his understanding of the unconscious motivation of his symptoms might be hastened if the therapeutic interviews were supplemented with reading matter dealing with mental health. We feel that mental hygiene literature is rarely helpful to sanatorium patients. On the other hand, we attempt to use reading as a treatment for every patient, though all reading matter must be approved by the physician before it is given to the patient, even though the latter has requested it. In general, biography, history and travel books have proved most satisfactory, probably because of the opportunity for innocuous identification by the patient.

No order was made for our patient in the field of educational therapy. In any individual showing as much anxiety as he did the possibility for application and concentration to any type of study is so slight that it bids fair to fail. On the other hand, our order sheets

permit the physician to recommend to the educational director the trial of a variety of subjects, the most popular being ballroom dancing, interior decorating, music appreciation, sketching, shorthand and type-writing. Through the opportunity afforded by university extension courses and an affiliation with the local college, the patient may have almost any type of educational work that seems to promise therapeutic value.

In recreational therapy our patient was to be invited and if necessary urged to participate in indoor and outdoor games as well as going horseback riding and attending the dances, picnics, moving picture shows and teas. The object of this prescription was to encourage under supervision the extension of his interests from his hypochondriac delusions to these outside activities. Golf and playing ball were especially indicated as a specific outlet for his aggressions in a socially acceptable manner. Following a satisfactory game of golf, his antagonism toward his environment as well as his concern about himself was always much lessened. In this section the physician also prescribes the number of hours to be spent in this department, and he may indicate whether the recreation is to be carried out only with the therapist or in a group. In addition to giving him an outlet for aggressions on objects, the patient's recreation should make reality more pleasant. It also affords an opportunity for resocialization. In the case under discussion it was primarily through the social activities, the teas, parties and dances, that he was given the opportunity of regaining his confidence in the presence of others. Before he left the hospital he had twice presided at the patients' forum, once giving a motion picture show of some of his own pictures of a trip in Europe and later making a talk on the political situation in his state and leading the subsequent discussion.

The next two departments, project work and occupational therapy, are closely related. By project work we refer to outdoor physical labor, and by occupational therapy to various indoor handicrafts. In this instance the therapist was instructed to place the patient immediately on construction work, graded both as to complexity and as to the amount of physical effort required. In occupational therapy he was to go to the shop to work for a period of two hours each day on furniture construction, with an opportunity to develop a hobby and work out a project requiring intricacy, skill and concentration.

It is our thesis throughout that the physician should prescribe these various types of therapy in as specific a manner as he would medication. We feel that it is important to indicate where the work should be carried out, the length of the daily work period, the nature of the project, and the therapeutic aim in carrying out a particular type of work.

We regard occupational therapy, and to a lesser or greater degree every type of therapy as an excellent opportunity to meet a variety of emotional needs as a method of permitting aggressions in acceptable forms, as a method of unconscious identification, as a method of propitiating unconscious guilt, as an outlet for the desire to create, and as a method of obtaining love. In our business man patient, occupational therapy did prove to be an opportunity for expressing aggressions which called for no punishment. He was first assigned the job of demolishing a part of a building, and his conscientiousness and enthusiasm were very evident. His feeling of well being gradually increased following the digging of a 2-foot foundation trench, and when

assigned to construction work he was convinced of the fallacy of his belief in his heart disorder, after he had sawed nearly a cord of fire wood.

The orders for medication for our patient included only barbitol for sleeping. However, this was disguised in hot milk, and the nurse was instructed to make no comments when giving it to him. This was desirable because he had taken a great many forms of sedative and, as with many neurotic patients, knew the shape, color, consistency and taste of most of the common sedative drugs. In this instance he immediately slept far better than he had for some time, even though, according to the history, he had previously taken larger doses of the same drug repeatedly.

In the orders for his diet the patient was instructed to go to the dining room, primarily for the socialization effect, and to be given a regular diet. Because he was underweight he was given between-meal nourishment. It will be noted that the order sheet permits even the detail of omitting silverware if that is advisable.

Through these orders we attempt to transmit to our nurses and therapists our conception of the patient's management. Preliminary orders are sent to the hospital within the first twelve hours of the patient's residence. Often our information is incomplete at this time, and we may not know any of the idiosyncrasies and peculiarities of the patient. Never is it possible on admission to forecast the unconscious identifications he may make for the people around him and hence his reactions to them. The admission orders do not necessarily afford a working plan beyond the first few days, and never beyond any marked change in the patient's condition. Consequently, following the presentation of the case at a staff meeting (usually within ten days after admission) a new set of order-sheets is written, and again at intervals of not more than thirty days.

The training of the nurses and therapists in psychiatry and the giving to them of an outline of the program of therapy are all only preliminary to the treatment of an individual case. We have also worked out a reasonably successful plan for supervising the execution of these orders. Its description, however, would be of interest chiefly to hospital administrators.

In a description of this plan it has been my intention to present the positive observations and experiences that have evolved from a trial of some years. To this point I have purposely neglected to introduce the many unsolved problems involved, some of which may be briefly indicated. Our plan is inadequate to meet the problems of the chronically ill patient who shows marked regression. We are perplexed in the therapeutic management of the masochistic individual who cooperates too well in all aspects of the program and doggedly fulfils every prescribed activity. A major problem is present in securing the cooperation of a variety of patients who assume the attitude that our plan isn't the right one for them. I have not mentioned the problems presented by the relatives of patients, who often obstruct our program intentionally or unintentionally.

We are carrying on some research in other problems concerned with this plan. As mentioned, we attempt to indicate our therapeutic aims in each case, but the method of achieving this aim is difficult to determine in specific types of therapy. At present we are attempting to classify our occupational activities into groups which most effectively meet these various therapeutic aims. We hope to determine from observation and controlled experimentation, for instance, the most effective

tive type of work and use of tools to permit the expression of hostility, to propitiate a feeling of guilt, and the like. For some years we have been experimenting with certain reading material as a therapeutic agent, specifically the desirability of mental health literature both fiction and nonfiction and the desirability of historical and travel books over fiction.

The inference is that from these research problems we expect to learn much more about the specificity of treatment for the mentally sick individual and how and why various therapeutic measures are successful or unsuccessful.

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CONTRIBUTORY CAUSES OF CORONARY THROMBOSIS

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If the prophylaxis of coronary thrombosis is possible in a practical way, it must be based not only on an understanding of basic conditions, such as atherosclerosis but also on a recognition of, first, the individual liable to an attack and, secondly, exciting or precipitating factors. In considering susceptibility, the presence of peripheral arteriosclerosis forms merely a general background and even the now possible x-ray visualization of advanced coronary changes is of but little practical help when it is realized that even then the vessel may be patent or, for that matter, that total obliteration, if gradual, may be symptomless.¹ Characteristic electrocardiographic changes occur after the occlusion, and the term "arteriosclerotic heart disease" is too inclusive and inaccurate. That there are anticipatory symptoms and signs is suggested by the following statistics of cases treated at the Boston City Hospital and supplemented by records from my personal practice. Obviously, many records of proved coronary disease have to be discarded because of inadequate histories obtained.

Table 1 needs a few words of explanation and comment. The first group of 15 per cent gave no past history of real significance. Obviously, the largest group comprises those patients who have suffered from a previous attack of coronary thrombosis or have been subject to angina. By "dyspnea" I mean excessive difficulty in breathing on even slight exertion, but without pain and without discoverable underlying cause such as allergy or a pathologic condition of the lungs. Although paroxysmal nocturnal dyspnea was present in only 7 per cent of the cases, I feel that it is a most important symptom. I am using the term "myocardosis" rather than "stenocardia" or "arteriosclerotic heart disease," for I believe that a more concrete symptom complex exists if it is restricted to cases presenting that triad of symptoms: palpitation, dyspnea and precordial discomfort or pain described by Biering² and others with perhaps minor clinical and electrocardiographic changes. The abbreviation "sweating" refers to the very small group (2 per cent) in which there was a history of acute exhaustion and profuse sweating on slight exertion.

I have felt hesitant in recording the last group labeled "indigestion." The reaction to the term may

be either that digestive difficulties are too common to be significant here or else that this so-called indigestion is a mistaken interpretation of coronary symptoms (which it may well be). However the term is restricted to those patients who, only a few months prior to their coronary attack, have complained (and for the first time) of abdominal distention, gas and some nausea, these symptoms being related to meals and especially to hurried or excessive eating and relieved markedly by belching or vomiting. Add to this a complete absence of discoverable gastro-intestinal disorder and also an unexplained and rapid increase in the frequency and severity of the attacks, as a rule, until they have merged into a real coronary disaster.

The converse of this table is perhaps of more interest. Coronary thrombosis develops in more than half of all cases of angina pectoris. Myocardosis is definitely a degenerative heart disease and dependent on coronary disease. Dyspnea, otherwise unexplained, and marked on slight exertion in a middle-aged individual is more than suggestive of underlying coronary disease. Statistics relative to underlying hypertension I have omitted, as they are confusing and, when based on the patient's history, inaccurate. Its incidence has been placed variously at from 20 to 40 per cent. Conversely, the incidence of coronary deaths in hypertension probably lies between 6 and 10 per cent.³ While premonitory physical and laboratory signs, singly, are not characteristic, they may, in combination or in association with symptoms, be diagnostic. The clinical observations in myocardosis, with perhaps some variation of the contour of the ST wave or lengthening of the auriculo-ventricular, QS or QT interval, may be enough to make a presumptive diagnosis. For that matter, bundle branch and marked auriculoventricular block, together, are practically pathognomonic of coronary thrombosis, and the prominence of Q₃, I believe, merits further study in this connection with especial emphasis on its recognition by Hurvath's⁴ methods.

With regard to table 2, let me point out that in about 60 per cent of the cases the attack was in no way related to physical stress. Of the remaining 40 per cent exer-

TABLE 1—Past History in 235 Cases

Past History	Cases	Approximate Percentage
None	36	15
Angina or previous thrombosis	90	38
Dyspnea (only)	21	9
Paroxysmal nocturnal dyspnea	17	7
Myocardosis	47	20
Sweating	5	2
Indigestion	19	8

tion was, in 17 per cent of the total, only moderate, such as walking or running a machine, and also that more than one half of these attacks (forty-three out of seventy-seven cases) during so-called exertion occurred within an hour after the ingestion of food. Drew Luten⁵ made the following observation: "Evidence suggests that coronary constriction induced by gastro-intestinal reflexes may also occasionally play a part in thrombosis." The first group, labeled "exercise," includes not only violent exercise, such as running but also such exercise as golf, and I have also included the possible stress of surgery and general infections under

From the Third Medical Service, Boston City Hospital, head before the New York Polyclinic Medical School and Hospital, Nov. 4, 1935.

1. Lea, Timbly and Wearn. J. T. Two Cases of Complete Occlusion of Left Coronary Arteries. *Am. Heart J.* 7: 412 (April) 1930.
2. Biering. W. I. Myocardosis—A Syndrome. *J. A. M. A.* 101: 101 (Oct. 10) 1930.

3. Janeway. T. C. A Clinical Study of Hypertensive Cardiovascular Disease. *Arch. Int. Med.* 12: 755 (Dec.) 1913.

4. Hurvath. I. M. Identification of the Separate Components of the QRS Complex. *Am. Heart J.* 9: 238 (Dec.) 1913.

5. Luten. Drew. Contributory Factors in Coronary Occlusion. *Am. Heart J.* 26: 56 (Oct.) 1913.

this title In the larger group occurring while the patient was at rest (either lying, sitting or at most walking about in a house) 12 per cent occurred after eating and 5 per cent of the patients had been on large doses of digitalis The relationship to the administration of epinephrine and insulin needs no comment Dehydration, with possible resulting increase in blood viscosity,

TABLE 2—Precipitating Causes in 437 Cases

	Cases	Approximate Percentage	
Physical stress			
Exercise	57	13	98 cases (23%)
Surgery	26	6	
General infection	10	3	
Moderate or usual exertion (43 cases after eating)			77 cases (18%)
After eating	4	12	226 cases (51%)
Digitalis	23	5	
Epinephrine	5	1	
Insulin	22	5	
Resting			
Dehydration	27	6	
Primary anemia	3	14	
Malnutrition	13	3	
No cause	68	15	
Larval	11	2	
Sleeping			
No cause			36 cases (8%)

although present in but a small group, was the only discoverable exciting cause in twenty-seven cases (as was also the case in the group occurring after the ingestion of food) Malnutrition might perhaps be added to this, because of both clinical and theoretical similarity "No cause" is self explanatory, and by "larval" I mean that type of coronary thrombosis in which the onset is indefinite because so gradual The group entitled "sleeping" I have again specified as having "no cause," for I believe that the theory that an attack occurring during sleep is precipitated by troubled dreams is untenable, for, both logically and also from an analysis of case histories, its converse would seem true, namely, that the thrombosis has caused the nightmare (even as indigestion may)

From these figures it would seem that it should be possible to foretell attacks of coronary thrombosis in the majority of instances There is not only the obvious group of patients suffering from angina pectoris or having had a previous occlusion of the coronary artery, comprising about 40 per cent of the total number of cases, but also other signs and symptoms, such as paroxysmal nocturnal dyspnea, which are almost pathognomonic, especially if in combination, and I believe that my estimate of only 17 per cent of the cases giving no history of suggestive signs or symptoms is modest It is the precipitating causes, however, which I wish to stress, although I realize that there are probably many omissions, such as thyroid dyscrasia or sensitivity to tobacco, which perhaps should be considered The possible untoward effect of digitalis needs no comment my observations are, in a way, merely statistical corroboration of work previously done by Gilbert and Fenn⁶ and others Recently there was an excellent discussion by Master⁷ on the value of a low calory diet in coronary thrombosis I have approached this in a different manner, namely, by frequent small feedings (even during the night and early morning hours), in patients suffering from anginal attacks Furthermore, the influence of dehydration and even malnutrition is perhaps explained by the work of Roemheld and Babkin, as quoted in this article by Master

To my mind, the most important consideration is the infrequency of physical stress (occurring in only 40 per cent of the cases) as a precipitating cause and, conversely, the greater number of attacks occurring during rest Luten,⁸ in commenting on the occurrence of coronary thrombosis during sleep, drew attention to the impoverished coronary circulation due to lowered diastolic pressure and decreased systolic output, most marked during the early morning hours It might be interesting to speculate on the work of Zwaardemaker⁹ and Schwartzman¹⁰ and their claims to have isolated a substance not only from the myocardium but also produced by activity in skeletal muscles, which increases coronary flow However, it is simpler to base one's conclusions on clinical observation, for it is known that the ordinary patient suffering from angina pectoris, even if it be angina of exertion, is benefited by carefully graded exercise A recent study,¹¹ which was based on 500 cases of heart disease in workmen whom I examined impartially for the Massachusetts Industrial Accident Board, persuaded me that the manual laborer who has heart disease but who, for economic reasons must continue working, has a better life expectancy and also a much later advent of cardiac incapacity than the so-called private patient or "white collar" worker A consideration of the anatomy and physiology of the coronary arteries, in addition to careful analysis of case histories, leaves a great doubt in my mind concerning any definite causal relationship between physical stress and coronary thrombosis

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THE BLOOD CYANATES IN THE TREATMENT OF HYPERTENSION

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A few years ago I gave a number of patients with hypertension potassium or sodium thiocyanate with results that were generally unsatisfactory Some showed extreme weakness, nausea and dizziness, while an occasional one seemed to be considerably improved as far as the symptoms and blood pressure level were concerned In general, it seemed that older patients or those who had a blood pressure elevation over a long period of time seemed to tolerate cyanate therapy less well than the younger group Careful observation indicated that individual dosage was necessarily dependent on the individual response and the toxicity An attempt has been made, therefore, to gage the dosage by a study of the cyanate clearance from the body through the urine and a correlation by the blood cyanate level and the blood pressure The following material is being presented as a preliminary report on such observations extending over a period of four years

LITERATURE

The pharmacology of the cyanates is very little understood Claude Bernard¹ made the first observations, which were reported in 1857, and he regarded them as a muscle poison which abolished muscular

6 Gilbert N C and Fenn G K Effect of Digitalis on the Coronary Flow Arch Int Med 50 668 (Nov.) 1932
7 Master A M Coronary Artery Thrombosis J A M A 105 337 (Aug 3) 1935

8 Zwaardemaker H Erghn d Physiol 20 326 1921
9 Schwartzman S Paris M J March 8 1930
10 Phipps Cadis The Relation of Physical Exertion to Heart Disease U S Dept of Labor Bureau Lab Statistics No R 149
Read before the Central Society for Clinical Research Nov 3 1934
From the Renal Clinic of the Departments of Medicine and Physiology of Northwestern University School of Medicine and from the Medical Service of Pasavant Memorial Hospital
1 Bernard Claude Leçons sur les effets des substances toxiques et médicamenteuses Paris 1857 pp 354 385

activity Pauli² and LeRoy³ independently noted decreases in blood pressure while studying the cyanates. Nichols⁴ reviewed the pharmacologic and therapeutic properties of thiocyanates in 1925. Schreiber⁵ showed that it took from two to three weeks for cyanates to return to normal levels in the saliva and in the blood after the administration was discontinued. He indicated that toxic manifestations in the normal individual appeared when the blood cyanates reached 40 or 50 mg. More recently Healy⁶ has shown that the cut surface of the adrenal body was strongly positive for the thiocyanates in the cortical portion when potassium thiocyanate was administered to rabbits, which suggested the possibility of the accumulation of the drug in the adrenal. Smith and Rudolf⁷ administered sodium thiocyanate to normal individuals. The cyanate was stopped when the blood pressure fell below 100, and none complained of symptoms. From one to eight weeks' time was required for the blood pressure to return to the previous normal level.

A review of the clinical literature brings a great divergence of opinion on the value of the administration of cyanates in hypertension. Goldring and Chasis⁸ noted a constant relation between the persistence of the hypotensive effect and the amount of thiocyanate administered. They cautioned that the dose should not exceed 5 grains (0.3 Gm.) daily and that the drug should be discontinued at the first indication of nausea, fatigue or vomiting or with the first distinct fall in blood pressure. Contrary to opinions generally expressed, these authors feel that thiocyanate carefully administered is just as effective and no more apt to produce toxicity in the patient with glomerulonephritis than in hypertension. Their reports on fatal cases, however, show no antemortem blood studies for cyanates. Representative toxic manifestations have been reported by Palmer and Sprague⁹ and others.¹⁰ Some¹¹ are strenuously opposed to the administration of cyanates. Others¹² report no toxic effects in patients closely observed. A review of the individual protocols of dosages reported by the various authors indicates that patients given larger doses more regularly suffered

toxic manifestations, while those who gave small doses reported little or no toxicity and often no decrease in blood pressure.

MATERIAL AND METHOD

This report covers observations on forty-five patients with systolic blood pressures well over 200, who have been personally studied in the renal clinic and in private practice during a period of from one to four years. The technic consisted in selecting patients who had been seen regularly and whose blood pressures were followed through periods of from one to four years on various forms of therapy. This should familiarize one with individual variations, influence of seasonal changes and the like, or factors that are so important in evaluating any therapy in this group, as emphasized by Ayman,¹³ Davis¹⁴ and others. The patients have been repeatedly studied from the cardiorenal-vascular standpoint, but the details of this work are too extensive to be included here.

It was thought that the factor of individual variations in toxicity might be avoided or controlled by following the blood cyanate level. If so, it was thought that a dose of cyanate might be attained which would reduce blood pressure without causing toxic symptoms.

A modification of Schreiber's⁵ technic for the determination of thiocyanates in the blood was developed, which has been simple, once the following standards were made up.

THE ESTIMATION OF THIOCYANATES IN THE BLOOD

Solutions—1 Ten per cent trichloroacetic acid solution

2 Ferric nitrate reagent. Dissolve 50 Gm. of crystallized ferric nitrate in 500 cc. of distilled water. Add 25 cc. of concentrated nitric acid and make up to 1 liter with distilled water.

3 Thiocyanate standards. Stock solution. Dissolve about 1 Gm. of potassium thiocyanate in 800 cc. of distilled water. Titrate a 20 cc. portion of a standard silver nitrate solution (made by dissolving exactly 29.195 Gm. of silver nitrate in 1 liter of distilled water) acidified with 5 cc. of concentrated nitric acid, with the potassium thiocyanate solution, using ferric ammonium sulfate as an indicator. Calculate the amount of water which it will be necessary to add to the potassium thiocyanate solution to make 20 cc. equivalent to 20 cc. of silver nitrate solution. Add the calculated amount of water, mix thoroughly and check the solution by another titration to make sure the potassium thiocyanate solution is exactly equivalent to the silver nitrate solution.

Standard solutions. Make three dilutions of the stock solution to give the following three standards: (1) 100 cc. of stock diluted to 1 liter with water gives a standard which contains 0.5 mg. of the thiocyanate ion in 5 cc. of solution. (2) 70 cc. of stock diluted to 1 liter with water gives a standard which contains 0.35 mg. of the thiocyanate ion in 5 cc. of solution. (3) 40 cc. of stock diluted in 1 liter with water gives a standard which contains 0.2 mg. of the thiocyanate ion in 5 cc. of solution.

Method—Transfer 5 cc. of the 10 per cent trichloroacetic acid solution to a test tube. Add 5 cc. of serum or plasma. Stopper and shake well. Allow to stand from ten to fifteen minutes. Filter through a small filter paper. The filtrate should be perfectly clear. If it is not filter again through the same filter paper. Measure 5 cc. of the filtrate into a clean, dry test tube. Add 1 cc. of the ferric nitrate reagent. Mix and read in a colorimeter with the standard solution set at 20 mm., choosing that standard which most nearly matches the unknown. The standards are made as follows: Transfer 5 cc. of each of the three standard solutions to three test tubes. Add 5 cc. of trichloroacetic acid solution and 2 cc. of the ferric nitrate reagent to each. Mix.

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8 Goldring, William and Chasis, Herbert. Thiocyanate Therapy in Hypertension. *Arch. Int. Med.* 49:321-329 (Feb.) 934-945 (June) 1932.

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Calculation—With the standard solution set at 20 mm for the colorimetric comparison the calculation may be simplified to the three following forms, depending on the strength of the standard

1 Using the 0.5 mg standard, 200/reading-mg of the thiocyanate ion in 100 cc of serum

2 Using the 0.35 mg standard, 140/reading-mg of the thiocyanate ion in 100 cc of serum

3 Using the 0.2 mg standard, 80/reading-mg of the thiocyanate ion in 100 cc of serum

Before the patient was started on cyanate, all therapy was discontinued and control observations for cyanates in the blood and urine were made. The patients were then given 0.3 Gm of potassium or sodium thiocyanate daily. They were seen twice a week for the first two weeks and once a week thereafter until an equilibrium between the dosage of cyanate and blood pressure was established. Blood cyanate determinations were made at each visit. A number of patients were hospitalized and then given doses of from 0.3 to 1 Gm daily for a number of days, until sharp falls in blood pressure or toxicity were noted. Daily cyanate determinations were made on the blood and urine of this group. The urine clearance of cyanates varied greatly, and that feature will be discussed at a later date as a factor of individual tolerance. In the main, no clear-cut information has been gained from the urine clearance alone, but there was a fairly good correlation between the blood cyanates, the toxicity and the reduction of the blood pressure.

RESULTS AND COMMENT

Whenever the cyanates in the blood were raised above 5 or 10 mg, a fall in the systolic and diastolic blood pressures occurred in thirty-five of the forty-five patients studied. Slight toxic manifestations, namely, weakness, ease of fatigue and dizziness, were noted in many of these patients but were not especially disturbing until the blood cyanates were raised above 10

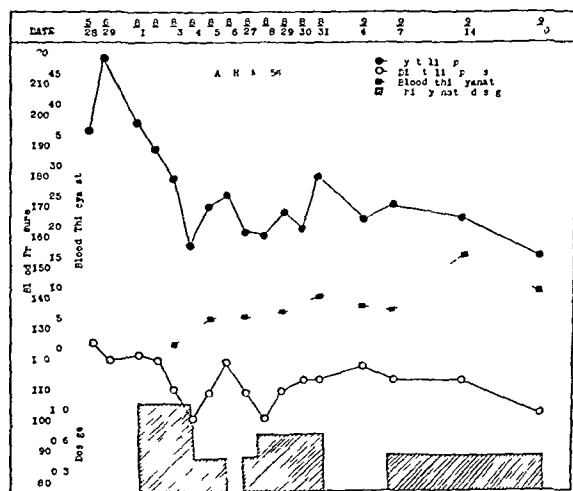


Chart 1—Clinical course in case 1

or 15 mg. Toxicity increased rapidly above the blood level of 20 mg, but serious manifestations were not noted until levels from 35 to 50 mg were reached. From the standpoint of the relief of symptoms and the drop in blood pressure, it seemed that a blood cyanate level from 6 to 10 mg was ordinarily required. The dosage was found to be individual in each case. For example, one patient required a dosage of only 60 mg, while another required 720 mg a day to maintain a

blood cyanate level of 10 mg. As the cyanate clearance through the kidney improved, the dosage had to be gradually increased during the weeks that followed, if the blood pressure and the blood cyanate levels were to be maintained.

It will be impossible to go into the many details incident to the observations and care of this group of

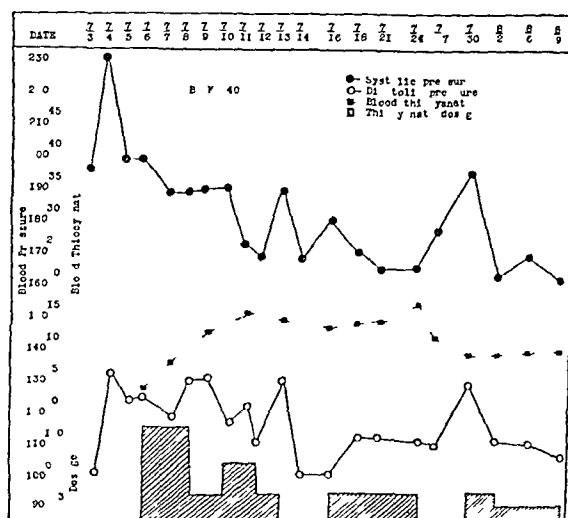


Chart 2—Clinical course in case 2

patients, but charts 1 and 2 will indicate typical experiences in general.

Early in the study of two of these patients, severe weakness, vascular collapse and cerebral thrombosis with ultimate recovery was experienced. Both patients had had severe hypertension of long standing and their pressures ranged from 250 to 275 most of the time. The neurologic evidence of thrombosis occurred twelve and thirty-six hours after the vascular accidents were noted. In both of these patients the blood cyanates were found to have risen sharply to levels of 33 and 45 mg respectively on doses considerably under that recommended in the literature. Without the blood cyanate observations, no doubt such responses would have been regarded as merely intolerance to the drug rather than to an actual overdose. Such experiences also cause me to suspect that deaths may have occurred in the past, in the course of cyanate therapy, which may have been attributed to the vascular accidents common to the patient with vascular disease (charts 3 and 4). Two other patients were carried to 35 mg per hundred cubic centimeters without collapse. One complained of much fatigue with only slight reduction of the blood pressure, while the other one complained of great fatigue and somnolence associated with a sharp fall in the blood pressure (chart 5). The return of the blood pressure to the previous high levels lagged behind the reduction of the blood cyanates. This experiment was repeated several times, and the blood pressure was now maintained at from 150 to 180 mm by a dosage of potassium thiocyanate, which maintains a blood cyanate of 10 mg.

Of the forty-five patients studied with the blood cyanate level controlled, no two have been found that were comparable. Thirty-five of the forty-five have responded with respect to symptoms and blood pressure levels in essentially the following way. A dosage of 0.3 Gm a day usually was associated with a decrease in nervousness, diminution of headaches and often a beginning fall of blood pressure in from five to seven

days. At this time the blood cyanates were generally found to be between 5 and 7 mg per hundred cubic centimeters. The patients then frequently complained of fatigue. Insomnia often changed to somnolence and the blood pressure generally fell from 30 to 50 mm in the first ten or fifteen days. At that time the blood cyanates were commonly found to be between 8 and 10 mg per hundred cubic centimeters. To prevent elevations over 10 mg the dosage was now decreased to 0.3 Gm three or four times a week. If the blood cyanates were then found to be 10 mg or over, the administration was discontinued, because, in the instances in which the blood cyanate level rose above 15 mg increasing symptoms of toxicity were noted. A peculiar aching of the legs and body disturbed an occasional long standing case. Quite a number of patients commented on their increased urinary output. Some of this group had congestive heart failure so that such a diuresis was associated with a return of compensation and loss of edema. A reduction in the size of the heart of four patients was noted. Such responses indicate the importance of the reduction of the load on the cardiac mechanism. One young patient with severe hypertension now under control has noted a great increase in seminal fluid formation which has persisted for several months. In some patients treated over a long period a severe anemia has developed.

As reported by Borg,^{1*} this study has not revealed any difference between the sodium and the potassium salt. The toxic manifestations, hypotensive effect and blood levels for these two salts have been essentially the same. No skin manifestations have been noted to date. Three patients have shown a peculiar myxedematous swelling of the tissues of the face, orbital areas and cervical regions. One occurred in a woman after one year and the other occurred in a woman after fifteen months of the administration of cyanate. In the latter

troublesome relation to the cyanate therapy, but they cause one to be alert for other evidences of possible endocrine effect. One cannot help recalling the diffuse thyroid enlargement noted in rabbits after the feeding of cabbage, which has been considered to be possibly of cyanate origin.

Ten of the forty-five patients showed little or no response to cyanate therapy. Two of this group

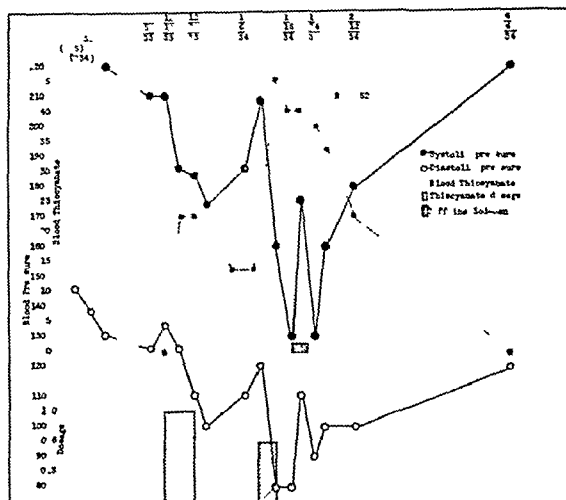


Chart 4—Clinical course in case 4

required larger doses (0.6-1 Gm daily) to maintain the blood cyanates over 8 mg. No relief of blood pressure or its attendant symptoms could be otherwise obtained. Symptoms of toxicity, especially fatigue, often were as annoying as those of the hypertension. Although occasionally one of these patients felt better on such doses, it has been difficult to keep the pressure below 200 mm. Attempts to effect a further reduction were attended by toxic manifestations, and the cessation of cyanate therapy was soon followed by a return of the blood pressure to its former levels of from 230 to 280, with all the old symptoms. Three of this group showed no immediate response, but, on a dosage sufficient to maintain a blood cyanate level of from 9 to 15 mg for from three to four months, a cessation of the fluctuations to high levels was noted. In these patients the systolic pressure appeared to stabilize at the lower level, namely, about 200 mm for a time and then a gradual reduction of both systolic and diastolic levels occurred, so that these three patients are now maintained around 150 or 170 mm. The remaining five patients showed no response other than toxic manifestations of a severe degree. Although the reason for the patients to fail to respond to cyanate therapy is not clear, it was evident that the most resistant cases presented well advanced arteriosclerosis. Some older patients with severe hypertension of several years' standing were 'cyanate sensitive' and have been almost as easily stabilized as any of the younger nonsclerotic group.

In general, if the patient is found to be able to tolerate the cyanates it seems much more satisfactory to effect a gradual reduction of the blood pressure so that he may become adjusted to the change. After the blood pressure has been maintained at a lower level for from one to three months a great improvement of the patients' symptoms is generally noted. The first period of weakness passes and a feeling of well being and a return of energy follow. Although the complications are many and varied the benefits derived in those

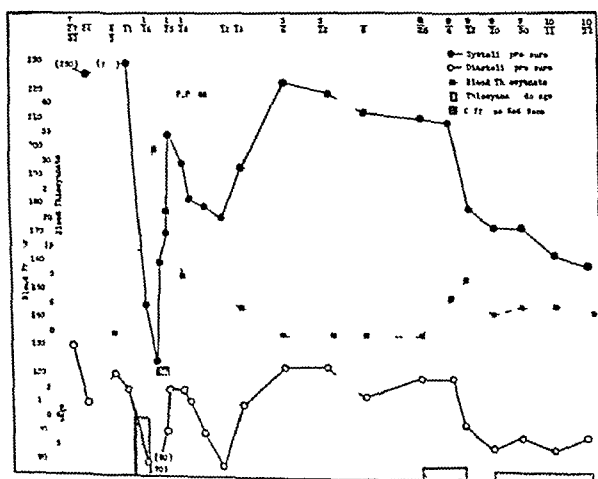


Chart 3—Clinical course in case 3

a large thyroid hoarseness, swollen face and heavy jaws developed. The basal metabolic rates were only slightly reduced (-18 — -9). In one man a diffusely enlarged thyroid gland developed after ten months' administration of potassium thiocyanates. His basal metabolism had fallen from $+19$ to -9 . The enlarged thyroids returned to normal size on the administration of desiccated thyroid. Such observations have ques-

* Borg, J. I. Experiences in the Use of Sulphocyanates. Minnesota Med. 13, 50 (May) 1910.

responding favorably, as manifested by a decrease in blood pressure with the relief of subjective symptoms and congestive heart failure together with the improvement of urea and uric acid clearance, the reduction of total serum proteins and phenols in the blood so frequently noted would indicate that the cyanates are worthy of further study

SUMMARY

Forty-five patients with hypertension have been given sodium or potassium thiocyanate and the concentration of the cyanates in their blood has been followed. The reduction of blood pressure and the relief of symptoms obtained in thirty-five of the forty-five roughly corresponded to the level of the cyanates in the blood. The optimum therapeutic level would seem to range between 8 and 12 mg per hundred cubic centimeters and significant toxicity begins to appear at from 15 to 30 mg. The individual tolerance varies greatly, the different levels being obtained with widely varying doses. The cyanates may reach hazardous concentrations very quickly in some individuals, so that the administration of the thiocyanates is believed to be dangerous unless controlled by close observation and blood cyanate determinations.

REPORT OF CASES

CASE 1—A H M, a man, aged 56, an executive under observation for three years, complained of nervousness, heart consciousness tremor and occipital headaches. Blood pressure

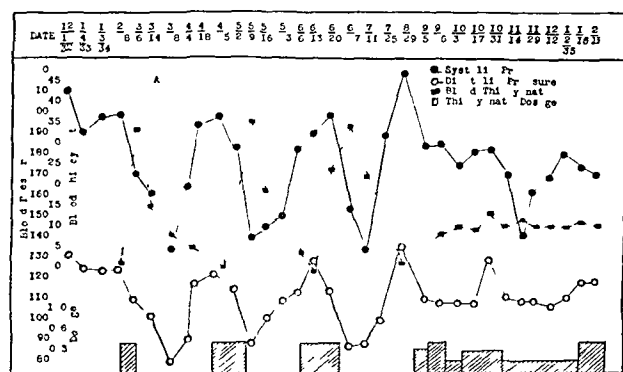


Chart 5—Clinical course in case 5

fluctuations were noted between 190 and 230 systolic and 120 and 130 diastolic the average being 200/120. A dosage of 1 Gm of potassium thiocyanate for four days was followed by a drop in both systolic and diastolic pressure. A fluctuation of readings was noted for a few days, followed by a leveling of the pressure at about 165/110 on 0.6 Gm (chart 1). During the past two years his blood pressure has been maintained between 155 and 170 systolic and 90 and 100 diastolic on a dosage which maintains the blood cyanates at about 10 mg. A complete relief of symptoms was noted after the first three months of cyanate therapy. His maintenance dose is between 2 and 3 Gm a week. Two attempts at stopping the drug were associated with a return of blood pressure elevation and symptoms after about four weeks.

CASE 2—B K, a housewife, aged 40, complained of severe pounding occipitofrontal headaches, dizziness, ringing in the ears, nervousness, insomnia, emotional instability, heart consciousness and weight loss. A known hypertension for five years and personal observation for one year revealed a blood pressure of 195-230 systolic and 100-130 diastolic the average being 215/120. A dosage of 1 Gm of potassium thiocyanate for two days was reduced to 0.3 Gm, and in sixteen days the fluctuant period had passed and the patient's blood pressure was rather constant at 165 systolic and 110 diastolic (chart 2). She was most grateful because she was now sleeping very well and was entirely free from headaches. The blood cyanates

increased to 15 mg by the nineteenth day after the cyanate therapy was started and she started to complain of fatigue and somnolence. The cyanates were discontinued for one week and a return of pressure began, which was again reduced with readministration of the drug. The maintenance dose was found to be 0.2 Gm of potassium thiocyanate for the next two months and during the next eight months was 0.3 Gm daily. The blood cyanate level noted at the optimum blood pressure readings was between 8 and 10 mg.

CASE 3—F P, a man, aged 68, a retired broker, admitted to the hospital Aug 27, 1933, had had a severe hypertension for a known duration of five years, with moderately severe congestive failure. A diuretic regimen of low sodium diet, ammonium nitrate, digitalis and mercurials brought him to a fair circulatory balance, but as soon as he was allowed up or out of the hospital the congestive failure returned. The blood pressure ranged between 238 and 250 systolic after six months of care. He was markedly sclerotic but it was decided to try cyanate therapy. He was given 0.6 Gm of potassium thiocyanate and on the fourth day he became pale, very weak and confused, and the blood pressure fell to 124/70 within a few hours. A cerebral thrombosis with a right hemiplegia, loss of speech and difficulty in swallowing came twelve hours later. The blood cyanates were found to be 33 mg. Caffeine with sodium benzoate in 5 grain (0.3 Gm) doses every two hours seemed to revive the vascular tone (chart 3, 1/16/34). The cerebral lesion gradually cleared and the blood cyanates returned to normal in fifty days. The blood pressure returned gradually to somewhat over 200 and the heart failure reappeared. A cautious resumption of a dosage of 0.2 Gm of potassium thiocyanate again caused a sharp fall of the blood pressure and later the maintenance dose was found to be 0.1 Gm. Renal clearance has improved so that one year later he requires 0.5 Gm potassium thiocyanate daily to maintain a blood cyanate of 8 to 10 mg. He seems to be in splendid health without diet, rest or any other form of therapy. The blood pressure averages 160/100.

CASE 4—R C, an executive, aged 52, who had had a severe hypertension of seven years' duration, had had a cerebral hemorrhage with slight residuals five years before this study was made. Personal observation of two years had shown blood pressure fluctuations of 240-300 systolic and 140-170 diastolic, and a moderately severe congestive heart failure was present much of the time despite energetic therapy. Sedatives and venesections reduced the average pressure to 210/130 on three periods of hospitalization. Within two or three weeks after the patient resumed activity the blood pressure would be found at the previous high levels. He was again hospitalized and after his blood pressure seemed stabilized ten doses of 1 Gm of potassium thiocyanate administered on consecutive days were associated with a significant drop of the pressure (185/110). The medication was stopped and the blood pressure soon began to return to its former level. After discharge from the hospital he was instructed to take 0.6 Gm of potassium thiocyanate daily and to return biweekly for observation. The patient drank the medication directly from the bottle without measuring the dosage and he was found at home in vascular collapse (chart 4, 1/16/34) with a blood pressure of 128/80. Large doses of caffeine with sodium benzoate seemed to revive him greatly and the blood pressure rose much after the manner noted following caffeine administration in quinidine intoxication. His blood cyanates were found to be 45 mg and it required nearly four months for them to return to normal. During the first half of this recovery period the patient was disoriented, confused and extremely weak. There was a marked defect of speech. The return of the blood pressure with resistant heart failure caused a cautious resumption of the thiocyanates. At first 0.3 Gm a week was sufficient to maintain a 10 mg blood cyanate level and an associated blood pressure of 180-200 systolic and 90-110 diastolic. The renal cyanate clearance has improved in the past year so that it is necessary to give 3 Gm a week to maintain the blood cyanate level of 10 mg. During this period the heart failure has not returned and the pressure remains slightly under 200/110, which he seems able to sustain without untoward effects.

CASE 5—A S, a woman aged 52 unemployed had had a known hypertension of sixteen years duration. She had been

under my personal observation for two years prior to this study. Her symptoms were headache, insomnia, emotional instability, nocturia and chronic congestive heart failure. Her record is striking in that she was "cyanate sensitive," and the blood cyanate and the blood pressure curves are quite reciprocal. At first a dosage of 0.3 Gm would raise the blood cyanates to 35 mg and the blood pressure would drop sharply. This fall continued for about three weeks after the drug had been discontinued (chart 5). Extreme fatigue was associated with elevations of blood cyanate over 15 mg. Renal clearance of cyanates gradually improved so that as time went on the dosage period required to raise the blood cyanates to the previous level of 35 mg had to be increased. Chart 5 shows this relation clearly, and it also shows that the patient had now reached a continuous dosage of 0.3 Gm of potassium thiocyanate daily in order to maintain a blood cyanate of 10 mg. This level of blood cyanates has continued to be associated with a blood pressure of 170 systolic and 110 diastolic most of the time. It is noteworthy that the patient has been without any dietary program or cardiac therapy for one year and feels quite well. She sleeps well and suffers no more headaches, and the emotional state is normal.

303 East Superior Street

THE TRAINING OF INTERNS IN SYPHILOLOGY

IN HOSPITALS APPROVED FOR INTERNSHIPS

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AND

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NEW YORK

It is conservatively estimated, on the basis of reliable data from many sources, that the prevalence of syphilis in the United States is about 5 per cent of the population, or approximately 6,000,000 men, women and children. Extensive authoritative studies have shown that at any one time not more than one tenth or one eleventh of the total existing cases of syphilis are under medical care. The vast number of unrecognized cases still constitutes one of the major public health problems.

The role of the private physician in the control of syphilis is necessarily an important one, since many of the unrecognized cases pass through his hands and will go untreated if he does not discover them. It has been shown that as yet about 72 per cent of all known cases of syphilis are under treatment by public clinics and specialists. The inadequate role that the private physician plays in the matter is one of the great obstacles to the control of syphilis.

Two questions are therefore pertinent: (a) How generally and effectively do the medical schools prepare their students for the modern diagnosis and treatment of syphilis? (b) To what extent do hospitals provide practical training and experience in the matter in the training of interns?

In 1933 the American Social Hygiene Association made a study of instruction regarding syphilis in American medical schools.¹ It showed a very wide range of standards from the worst to the best in this regard. In less than half the schools the standards of teaching about syphilis seemed reasonably satisfactory, and in only a few schools high. In many of the rest the standard was extremely low. The conclusion was reached that it was urgent that the standard which prevails in the best schools in this matter become more nearly the common standard of all the schools.

A study has now been made of the practices of hospitals, approved for internships, in training interns in syphilology, by the Council on Medical Education and Hospitals of the American Medical Association in cooperation with the American Social Hygiene Association.

Five hundred and ninety-four hospitals in forty-two states answered the inquiry. The number of hospitals by states range from one in each of four states to

TABLE 1—States Sending Largest Number of Replies

New York	84	Massachusetts	33
Pennsylvania	67	Ohio	32
Illinois	40	California	30
New Jersey	34	Michigan	24
Total			347

eighty-four in one state, namely, New York. States in which the largest number of replies were received are given in table 1.

Of the 594 hospitals reporting, 331 have an outpatient service and 263 have not.

Wide variation among states is shown in the proportion of hospitals having an outpatient service. For example, for the states leading in numbers of hospitals (table 1) the proportions are as given in table 2.

Of the total 331 hospitals that have an outpatient service, 314 make the syphilis service available to interns and seventeen do not.

Of the 314 hospitals that make the syphilis service available, 243 require the service of interns (twenty-one of these require it of some interns only) and seventy make the service optional. One hospital did not answer the question.

In this matter also of making the syphilis service a requirement of internships, there is a large range of variation among the states (table 3).

Of the 314 hospitals in which syphilis service is available to interns, 304 report that in this service interns work under experienced supervision. The other ten did not answer the question. Experienced supervision is necessary if interns are to profit by service in an outpatient syphilis clinic, without such supervision the tour of duty in the syphilis clinic has little educational value for the interns but important risks for the patients.

DURATION OF REQUIRED SERVICE IN WEEKS

Of the 243 institutions that require syphilis service of interns, 228 indicate the duration of assignments in

TABLE 2—Hospitals Providing Outpatient Service

	Number of Hospitals	Outpatient Service Provided	
		Yes	No
New York	84	50	29
Pennsylvania	67	58	7
Illinois	40	11	34
New Jersey	34	25	9
Massachusetts	33	19	14
Ohio	32	16	16
California	30	29	10
Michigan	24	10	14
Total	347	214	137

weeks. The assignments range from two weeks to thirty-four weeks, the average being ten weeks. The variation in leading states in the number of hospitals is shown in table 4.

A more true quantitative test of syphilis service requirements than assignments in weeks is the number

of hours devoted to it. In regard to this an even greater variance is found to exist. The highest requirement is 720 hours, the lowest is six hours, and the average is fifty-eight hours.

The average standard of requirement in these 243 hospitals is, then, an assignment of ten weeks to syphilis service at a little less than six hours per week, or a total of about sixty hours.

The record of assignments in hours in the leading states is given in table 5.

TABLE 3—Hospitals Making Syphilis Service a Requirement

	Hospitals in Which Syphilis Service is Available to Interns	Required	Optional
New York	48	20	22
Pennsylvania	57	48	9
New Jersey	20	20	3
Massachusetts	17	10	2
Ohio	15	12	3
California	19	17	2
Michigan	10	9	1
Missouri	6	6	3
Wisconsin	7	4	3
Texas	11	10	1
Connecticut	7	5	2
Maryland	8	0	3
Minnesota	7	7	0

TABLE 4—Variation in Duration of Assignments in Weeks

	Institutions Requiring Syphilis Service of Interns	Duration of Assignments in Weeks		
		High	Low	Average
New York	24	32	3	13
Pennsylvania	48	13	4	9
Illinois	6	8	4	7
New Jersey	20	26	6	10
Massachusetts	10	17	6	12
Ohio	11	26	4	11
California	17	13	4	7
Michigan	9	13	4	6
Missouri	6	13	2	8
Wisconsin	4	34	3	19
Texas	9	26	4	12
Connecticut	4	11	6	8
Maryland	4	13	6	10
Minnesota	7	8	2	6
Total	184			

It may be noted that the four states which lead in high and in average assignments in weeks are, in order, Wisconsin, New York, Texas and Ohio, whereas the four states which lead in assignments in hours are, in order, Massachusetts, Ohio, Minnesota and New York (table 6).

When all the states are considered, regardless of the number of institutions, the highest average records in hours assigned to syphilis service are held by Iowa, Virginia, Alabama and the District of Columbia (table 7).

DURATION OF OPTIONAL SYPHILIS SERVICE IN HOURS

Of the seventy institutions in which syphilis service by interns is made optional, only fifty-nine state the percentage of interns who avail themselves of the opportunity and forty-seven give the number of hours devoted to it as is shown in table 8.

COMMENT ON DATA

With regard to syphilis service being made available to interns it may be suggested that the noteworthy fact is not that of 331 hospitals which have an out-

patient service 314 make the syphilis service available, but rather that as yet seventeen hospitals do not make it available.

One of the most striking and significant facts of this study is the wide variation among the hospitals in the assignment of interns' time to syphilis service, ranging from a low of two or three weeks in five hospitals to a high of thirty-four weeks in one hospital, and a low of six hours to a high of 720 hours. While other factors undoubtedly enter in, the wide diversity in the policies and practices of hospitals in this matter may in the main be taken to measure the degrees of conviction on the part of hospital authorities as to the importance of training interns in the modern diagnosis and treatment of syphilis. The importance of syphilis as a public health problem and the fundamental role played by the private general physician in attempts to solve this problem would seem to leave no question as to the importance of a uniform policy on the part of all hospitals training interns of aiming to prepare all medical graduates to diagnose and treat at least the ordinary, uncomplicated cases of syphilis.

TABLE 5—Variation in Assignments in Hours

	Number of Institutions	High	Low	Average
New York	24	200	6	61
Pennsylvania	48	144	10	37
Illinois	6	126	40	78
New Jersey	20	104	12	37
Massachusetts	15	720	16	94
Ohio	11	300	10	91
California	17	180	9	47
Michigan	9	152	8	31
Missouri	6	150	28	60
Wisconsin	4	40	6	23
Texas	9	180	12	34
Connecticut	4	30	20	33
Maryland	4	24	10	20
Minnesota	7	200	6	49

TABLE 6—Comparison of the Four States Which Lead in Assignments in Weeks and in Hours

Assignments in Weeks				Assignments in Hours			
Number of Institutions		High	Average	Number of Institutions		High	Average
Wisconsin	4	34	19	Massachusetts	15	720	94
New York	24	22	13	Ohio	11	300	91
Texas	9	26	12	Minnesota	7	200	79
Ohio	11	26	11	New York	24	200	61

TABLE 7—Highest Average Hours Assigned

	Number of Institutions	Assignments in Hours	
		High	Average
Iowa	2	208	168
Virginia	2	300	134
Alabama	3	200	170
District of Columbia	4	360	106

In view of the extremely low standards of requirement in some hospitals in this matter, it would seem reasonable to suggest that all hospitals now requiring less than the average period of syphilis service, namely ten weeks including sixty hours, should as soon as possible attain at least this as a minimum period of service in the syphilis clinic required of interns.

It was shown that, in hospitals in which syphilis service by interns is made optional, the percentage of interns who avail themselves of the opportunity ranges

from a low of none in one state to a high of 100 in eight states (In four of these eight states only one institution in each state is represented) The average percentage by states of interns who take syphilis training ranges from 33 to 100

We observe also that the number of hours devoted by interns to optional syphilis service ranges from a low of ten to a high of 300, the average range, by states being from ten to 109 hours In eight of the seventeen states that report the optional hours devoted to syphilis service, the average falls below fifty hours While much improvement in this matter is called for there does seem to be a fair degree of spontaneous interest in the subject of syphilis on the part of interns

CONCLUSIONS

Training of interns in syphilology constitutes a vital factor in the control of syphilis

In the seventeen hospitals that have an outpatient service but do not make the syphilis service available to

TABLE 8—Duration of Optional Syphilis Service

	Number of Institutions	Per Cent Taking Training			Number of Hours			No Answer
		High	Low	Average	High	Low	Average	
Alabama	1	100	100	100				1
California	2	50	15	33	200	18	109	
Colorado	2	60	50	55	10	10	10	
Illinois	1	70	50	50	78	78	78	
Iowa	1	100	100	100	30	30	30	
Kansas	1	100	100	100	45	45	45	
Kentucky	1	100	100	100	60	60	60	
Louisiana	1	70	70	70	24	24	24	
Maryland	3	60	10	36	100	50	77	1
Massachusetts	2	100	75	88	50	50	70	
Michigan	1	50	50	50				1
Missouri	3	50	10	39	124	20	72	1
New Jersey	3	85	33	59	156	20	88	
New York	27	100	0	41	300	15	72	14
Ohio	3	90	33	71	30	24	27	1
Oklahoma	1	90	90	90	40	40	40	
Pennsylvania	8	100	10	78	100	14	39	2
Washington	2	50	33	42	32	32	32	1
Wisconsin	3	100	75	88	204	15	102	1
Totals	59							23

interns, a reconsideration of policy is to be recommended

In the seventy institutions that leave syphilis service by interns optional, a change to required service of adequate extent is important as a measure toward the control of syphilis

The comparatively high standard of requirement that prevails in a considerable proportion of hospitals needs to become more nearly the common standard of all hospitals It seems reasonable to expect that none should fall below the present average, namely, ten weeks, including sixty hours of required syphilis service under experienced supervision

50 West Fiftieth Street

Bones as Human Food—Bones are in fact, much more largely and widely utilized as human food than the people of western Europe and their descendants in the United States seem to realize. Nearly all other peoples are much more accustomed to eat the soft ends and porous interiors of the large bones of their prey or of such domestic animals as they may use for food while the bones of birds and small game are often munched entire, just as we eat bits of brittle toast. Studies of the food habits of the peoples of both the Near and Far East, of Eskimos, of American Indians, and of native African races have shown that all these peoples make large use of bones as foods.—Sherman H C Food and Health New York Macmillan Company 1934

TOXICITY OF CARBARSONE

ACUTE FATTY DEGENERATION OF THE LIVER,
EXFOLIATIVE DERMATITIS AND DEATH
FOLLOWING ITS ADMINISTRATION

ERVIN EPSTEIN, M.D.

LOS ANGELES

P-carbamnophenylarsonic acid ($H_2O_3AsC_6H_4NHCNH_2$) is a comparatively recent addition to the armamentarium of the modern medical practitioner Its use dates back to January 1932, when it was introduced by Reed, Anderson, David and Leake,¹ although experimental studies were started at least two years previously This compound is marketed by Eli Lilly & Co under the name of carbarsone and is supplied in capsules of 0.25 Gm (3¾ grains) each It contains 28.85 per cent arsenic and has been accepted by the Council on Pharmacy and Chemistry of the American Medical Association²

Although this product is an arsenical closely related chemically to tryparsamide and acetarsone ("stovarsol"), it is surprisingly nontoxic To date, no serious reactions or deaths have been reported following the rectal or oral administration of this drug In general, the pentavalent arsenicals, including tryparsamide and carbarsone, are less toxic than the trivalent group as exemplified by arsphenamine, neoarsphenamine, silver arsphenamine, sulfarsphenamine, bismarsen and mapharsen

The possibility of carbarsone producing fatalities by overdosage has long been recognized Reed, Anderson, David and Leake¹ quote minimum lethal doses for various laboratory animals However, the following case history is the first death and autopsy in a human being following the administration of carbarsone that could be found in the available medical literature

REPORT OF CASE

The history obtained of this patient was somewhat unsatisfactory During her stay in the hospital, she was irrational and disoriented, so it was necessary to obtain the history from her husband and from the private physician who took care of her during the month preceding her entry to the hospital

Mrs A J, aged 55, white, had suffered from anorexia and diarrhea for several months before she was seen by the previous physician She was having from eight to ten liquid bowel movements a day and some of these were said to have been black There was no history of nausea, vomiting or abdominal pain She visited a number of doctors and was given several medicines but she did not experience any relief and so did not continue their use for more than a few days before visiting another doctor No one knew the names of any of these physicians or the nature of the medicines she had taken

One month before entry she was seen by the practitioner who prescribed the carbarsone He states that at that time she was in very poor physical condition Examination of the stool revealed that it contained *Giardia* in large numbers but was otherwise normal

Therapy consisted of carbarsone, camphorated tincture of opium and ventriculin She took a total of 5 Gm of carbarsone by mouth during a period of ten days Another 25 Gm was administered in enemas, which were not retained As she

From the Department of Dermatology and Syphilology Los Angeles General Hospital

1 (a) Reed A C Anderson H H David N A and Leake C D Carbarsone in the Treatment of Amebiasis J A M A 98 189 (Jan 16) 1932 (b) Leake C D Chemotherapy of Amebiasis ibid 98 192 (Jan 16) 1932
2 Carbarsone Reports of the Council on Pharmacy and Chemistry J A M A 103 258 (Jul 28) 1934

weighed 60 Kg (150 pounds), this represents a total oral dose of 83.3 mg per kilogram of body weight

Two days before entry she first complained of a pruritic eruption and the carbarsone was immediately withdrawn. Despite this the patient became disoriented and was admitted to the Los Angeles General Hospital on July 12, 1935.

On entry the patient appeared acutely ill but did not appear to be having any pain. She was unable to give any history and answered "no" to most questions. The mucous membranes were pale and the skin was dry, shiny, smooth and erythematous. The entire body was covered by a scaling eruption, which was most marked on the extremities, especially the lower ones. The scales varied in size but tended to be about the size of a half-dollar (30 mm). Numerous excoriations were present. There was no clinical evidence of jaundice.

The hair was dry, gray and lusterless. The eyes, ears, nose and neck were normal. No mucous membrane lesions were noted, although the lips were dry and the throat was slightly reddened. She was edentulous. Shotty bilateral cervical and inguinal lymph nodes could be felt. The breasts were normal on inspection and palpation. The lungs were clear. The heart was slightly enlarged to the left but was otherwise normal. The systolic blood pressure was 120 mm of mercury and the diastolic pressure was 70 mm of mercury. The radial pulses were normal. The peripheral vessels were sclerotic on palpation. The abdomen was distended, the umbilicus flattened and there was nonshifting dullness in the flanks. Neither the liver nor the spleen was palpable. Other than the crustaceous dermatitis, the extremities showed no abnormalities. In general, the deep reflexes were sluggish but equal and the superficial reflexes were normal.

Laboratory studies on entry revealed a marked anemia. The blood count showed a hemoglobin of 46 per cent (Sahl) and 2,640,000 red blood cells per cubic millimeter of blood. The color index was 0.88. Slight anisocytosis, poikilocytosis, hypochromasia and polychromasia were present. The count further showed 5,650 white blood cells per cubic millimeter of blood. A differential count revealed 67.5 per cent polymorphonuclear leukocytes, 13.5 per cent lymphocytes, 4 per cent eosinophils and 15 per cent monocytes. The morphology of the polymorphonuclear leukocytes and the number of platelets appeared to be normal on the blood smear. The Wassermann and Kahn reactions on the blood were negative.

The urine was dark brown and had a specific gravity of 1.018. Its reaction was acid to litmus paper. A trace of albumin was present, but tests for sugar and acetone were negative. Microscopically a few red blood cells, white blood cells and epithelial cells were seen. No casts were noted. One test failed to demonstrate the presence of arsenic in the urine.

A large stomach tube was passed and a small amount of food that had been consumed twelve hours previously was aspirated. A gastric analysis was done later and neither free nor total hydrochloric acid could be demonstrated even after the injection of histamine.

The stools were liquid, and examination failed to reveal the presence of blood, purulent material or parasites.

Owing to the fact that none of the patient's skin was normal, neither patch nor scratch tests were performed with carbarsone.

Therapy consisted of sedatives (phenobarbital sodium and amytal compound), analgesics (codeine), high caloric diet, fluids (by mouth, subcutaneously and intravenously including dextrose), antianemics (ferric ammonium citrate and reduced iron), intramuscular liver injections, sodium thiosulfate intravenously (a total of 5 Gm), dilute hydrochloric acid in water with her meals, calcium gluconate by mouth and agents to control the diarrhea (camphorated tincture of opium and bismuth subcarbonate).

Local remedies employed included a bismuth and zinc oxide cream containing 1 per cent phenol theobroma oil at night, starch baths daily and a lotion consisting of solution of coal tar N F 6 cc, zinc oxide, 24 Gm, corn starch 24 Gm, glycerin 36 cc and sufficient water to make 120 cc. Mix and apply locally as required.

Under this treatment the patient progressed satisfactorily for more than a week. The diarrhea was decreasing, the dermatitis was clearing and her general mental and physical con-

dition was improving. July 21 she was given a transfusion of 500 cc of citrated blood. Temporarily this aided her even more. However, the following day she vomited for the first time, vomiting up her lunch and supper. The next morning at about 1:30 she suddenly became weak, cold and lethargic. The radial pulse became very rapid and was difficult to obtain on palpation. Caffeine and epinephrine therapy produced only temporary improvement. She did not speak and showed no signs of recognizing any one. She scratched herself constantly, but when her hands were held away from her body she scratched the bedclothes or whatever was at hand. The reflexes were normal at this time.

Previously there had been a daily elevation of temperature to 38°C (100.4°F) but her temperature dropped to normal on July 22 and remained so until her death. Edema of the hands and feet developed coincidentally with a decrease in the urinary output to from 150 to 200 cc daily. A urinalysis just prior to death was approximately identical with the one already mentioned except that there was a large amount of bile and a slightly increased urobilin content. The test for acetone also was positive.

The diarrhea was never completely controlled but at the time of death had decreased to four liquid movements a day. The flatulence increased and was not relieved by turpentine stipes, enemas or the insertion of a rectal tube.

July 25 the patient first developed a visible icterus of the skin, although the sclerae were clear. The liver became enlarged and deep palpation in the right upper quadrant of the abdomen would cause her to wince. Some rigidity was present in this location. Her neck also became very rigid and a lumbar puncture was performed. The initial pressure was 160 mm of water and the Queckenstedt test was normal. A light greenish yellow fluid was obtained, which contained 20 lymphocytes per cubic millimeter of spinal fluid. The test for globulin was negative and the sugar content was normal. The Wassermann reaction was negative and the benzoin curve was 0000000000000000. The following day the icterus index of the blood was reported as being 100, while the nonprotein nitrogen was 80 mg and the creatinine was 27 mg per hundred cubic centimeters of blood.

Despite stimulation, the patient quietly died at 12:45 a.m., July 27.

An autopsy was performed nine hours after death.

The brain weighed 1,125 Gm and appeared to be grossly normal except for a slight dullness of the arachnoid and some generalized edema. Sectioning the organ revealed a moderate amount of cerebral arteriosclerosis. Histologic examination of the frontal region showed some sclerotic change in the nerve cells and there was a marked oligodendrogliosis in the underlying white matter, with phagocytized pigment in the perivascular spaces. Some of the nerve cells had undergone fatty degeneration. A section taken through the white matter demonstrated an increase in oligodendroglia with acute swelling of these cells but no evidence of petechial hemorrhage could be found. Examination of the medulla showed only engorgement of the blood vessels. The optic nerves were normal on macroscopic and microscopic examination. Chemical analysis revealed that the brain contained 0.02 mg of arsenic per hundred grams of tissue.

On exploring the thoracic cavity a few small adhesions were found at the apex of the left lung. The pleurae and pleural cavities were otherwise normal. Both lungs were crepitant throughout and cut sections showed only slight hyperemia. The left lung weighed 325 Gm, while the right weighed 375 Gm. Slight hyperemia could also be noted on microscopic examination but no evidence of pneumonia was found. The bronchi and alveoli were slightly thickened but were otherwise normal.

The pericardium was clean and smooth and the pericardial cavity contained no fluid. The heart weighed 325 Gm. The myocardium was not thickened but showed very slight fibrosis. The coronary arteries were explored and found to be normal. The valves were not remarkable except for a slight thickening of the mitral valves.

The aorta showed marked atheromatous changes extending from the arch to the common iliac arteries. There was also

a small amount of lymphocytic infiltration in the tunica media and the tunica intima of the aorta. The renal arteries were moderately sclerotic but the other branches of the aorta were grossly normal. No abnormalities of the pulmonary vessels were noted.

The component parts of the gastro-intestinal tract were normal. The observations failed to explain the cause of the diarrhea and the black stools that were noted. The pancreas was normal. The spleen which weighed 125 Gm., was grossly normal but histologic examination revealed a few small areas of fibrosis and an increase in the amount of hematogenous pigment present.

The liver was enlarged and weighed 2,450 Gm. The surface was smooth and homogeneous in appearance and was light yellow. A normal amount of resistance was encountered in sectioning the organ. Cut surfaces showed normal lobulations, although the markings were fainter than usual. The extra-hepatic ducts and vessels were normal. Microscopically, the hepatic cells had undergone an acute fatty degeneration and the cytoplasm of each cell contained fat globules. In some portions of the slide, small areas of hemorrhagic necrosis could be seen. There was a moderate lymphocytic infiltration in the periportal spaces and a few polymorphonuclear leukocytes were present. The interlobular fibrous tissue was slightly increased and a number of new bile ducts had been formed. The liver was 65 per cent fat by weight and contained 0.03 mg of arsenic per hundred grams of tissue. Cultures taken from the liver on the autopsy table failed to demonstrate the presence of *Endamoeba histolytica*.

The kidneys weighed 225 Gm each and were slightly enlarged. Both organs were otherwise grossly normal except for a small retention cyst in the left kidney. On microscopic examination there were a few deposits of bile in the tubular epithelium, and a few areas of tubular necrosis were present. A large number of the cells lining the tubules had undergone cloudy swelling. The renal stroma showed a slight increase in fibrous tissue. The glomeruli were normal. The renal tissue contained 0.1 mg of arsenic per hundred grams. The remainder of the urinary system was normal. All the genital organs were atrophic.

The adrenals showed slight cortical degeneration and a few hematogenous pigment deposits. The other endocrine organs were normal.

TOXICITY OF CARBARSONE

As stated before, carbarsone is a relatively innocuous drug when compared to related arsenical compounds that also contain benzene rings. Anderson and Reed,³ in a series of 330 cases treated with carbarsone, found no evidence of skin, optic nerve or kidney damage. However, some of their patients experienced slight gastric upsets. One with a history of previous liver damage developed an acute hepatitis but this rapidly disappeared within five days after the withdrawal of the drug. In this series the total dosage ranged from 75 to 2,100 mg per kilogram of body weight given in divided doses over a period of fifteen months.

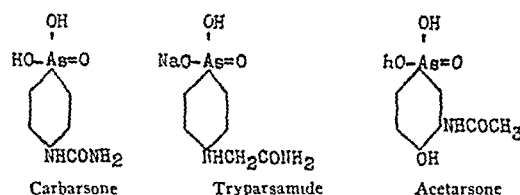
Ferrington⁴ has given graduated doses of carbarsone up to totals of 150, 300, 600, 800 and 1,200 mg per kilogram of body weight over a period of forty-eight weeks. This was given by administering the drug for four weeks and then following with a four weeks rest. In his series, Ferrington noted no evidence of toxicity according to clinical studies including visual field determinations, blood examinations and urinalyses at intervals of four weeks.

Minimum lethal dosage tables have been worked out for various laboratory animals.^{1a} This includes 150 mg per kilogram of body weight for guinea-pigs, 200 mg per kilogram of body weight for rabbits and

from 200 to 250 mg per kilogram of body weight for cats. This dose causes lethargy, loss of weight, abdominal distention, diarrhea, sluggish reflexes and failure of the pupils to respond to light. It should be noted that the patient described in this report exhibited all these signs and symptoms with the exception of the last named. Autopsies performed on animals given a minimum lethal dose of carbarsone showed necrosis of the kidney with tubular degeneration. When the dosage was confined to the therapeutic range, no signs of toxicity were noted and in those animals later killed by air embolism and examined anatomically no pathologic alterations were discernible.

In human beings a number of mild reactions have been reported, but none of these have led to serious consequences. One case was reported to the Council on Pharmacy and Chemistry of the American Medical Association in 1934.² This patient had received 0.25 Gm of carbarsone twice a day for six days. On the fourth day he complained of a headache and on the following day generalized pruritus was noted. On the sixth day a slight scaling erythematous eruption developed on the forearms. All signs of toxicity cleared within forty-eight hours after the withdrawal of the drug.

Dr. Frank Smithies⁵ reported a number of cases with reactions following carbarsone therapy before the



Chicago Society of Internal Medicine on May 28, 1934. One of these patients developed an exfoliative dermatitis of the hands and arms after less than ten capsules of 0.25 Gm each. Another patient was given twenty capsules of 0.25 Gm each and instructed to take one capsule three times a day. After the fifth day this patient developed laryngeal and pulmonary edema, sore throat, sneezing and lacrimation. Another patient was put on a regimen during which he took treatment for five weeks and then rested one week. Six weeks after the introduction of treatment, this patient developed acutely swollen ankles, knees and wrists and enlargement of the liver and spleen. A fourth patient developed faulty vision, photophobia, swelling of the eyelids and puffiness of the face. Urinalysis showed the presence of granular casts and albuminuria. Ophthalmoscopic examination revealed moderate papillitis and retinal edema. This followed the taking of a total of 1.75 Gm in three and one-half days. Several of Smithies' patients suffered from nausea, vomiting, diarrhea and vague abdominal pains while taking carbarsone. One of these developed a slight but definite icterus on the fourth day while taking 0.5 Gm of carbarsone daily.

As carbarsone contains a modified amino group in the para position to the arsenic atom, the possibility of the drug damaging the optic tract must always be considered and searched for in all patients under carbarsone treatment. Reed⁶ recommends the use of liver

³ Anderson H. H. and Reed A. C. Untoward Effects of Antimebic Drugs. *Am J Trop Med* 14: 296 (May) 1934.
⁴ Ferrington quoted by Anderson and Reed.³

⁵ Smithies Frank quoted in Council report.
⁶ Reed A. C. Amebiasis. A Clinical Summary. *California & West Med* 40: 6 (Jan) 1934.

function tests before prescribing carbarsone, as liver damage is a definite contraindication to its administration. Fantus⁷ recommends that the following signs of toxicity should be watched for in patients who are receiving carbarsone: gastro-intestinal irritation, congestion of the respiratory tract, neuritis, renal damage and visual disturbances. Pruritus, skin eruptions and enlargement of the liver or spleen should be added to this list.

Nothing has been written about the therapy of carbarsone poisoning. According to our present knowledge, treatment should be identical with that used in reactions to the other arsenical preparations.

COMMENT

Chemically, a very close relationship exists between carbarsone, acetarsone and tryparsamide. This is graphically portrayed by the chemical formulas of these substances.

With this in mind it is easy to comprehend why the reactions to these three drugs are so much alike. Stokes⁸ reports the following signs and symptoms of tryparsamide toxicity, which were also found in this patient: dermatitis, jaundice, hepatitis and slight irritation of abnormal kidneys. The same author⁸ lists the following reactions to acetarsone, which were present in this patient: malaise, headache, fever, edema, albuminuria, jaundice, eosinophilia, leukopenia and exfoliative dermatitis.

The recommended dose of carbarsone is 5 Gm given in divided doses over a period of ten days.^{1a} This may be repeated after a rest period. Accordingly, the patient did not receive an overdose of carbarsone but apparently died from a therapeutic dose. An accurate medical history of her last six weeks of life was obtainable and carbarsone is the only arsenical she received during this period.

Her liver damage was probably an acute process. The enlargement of the liver, the tenderness and rigidity in the right upper quadrant of the abdomen and the icterus developed while she was in the hospital. Histopathologic examination of the liver indicated an acute process, as there was little fibrosis or regeneration. With this evidence at hand, it is doubtful whether any drugs given previous to thirty days before entry could have been a major factor in causing her death.

It is true that the patient was in very poor condition before the carbarsone was administered. This may have reduced her tolerance to the drug. With our present knowledge, it can only be concluded that the patient developed signs of an idiosyncrasy to carbarsone within the therapeutic range and died despite withdrawal of the drug and active treatment for an arsenical exfoliative dermatitis.

SUMMARY

1. Carbarsone is less toxic in the therapeutic range when given by the therapeutic route of administration than most other related arsenical preparations but is not entirely innocuous.

2. Care must be taken in administering carbarsone and constant watch must be maintained for signs of intolerance.

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⁷ Fantus, Bernard. *The Therapy of the Cook County Hospital*. Philadelphia: J. A. M. A. 102, 1940 (June 9), 1934.

⁸ Stokes, J. H. *Modern Clinical Syphilology*, ed. 2. Philadelphia and London: W. B. Saunders Company, 1934.

WHAT IS THE SOCIAL OBJECTIVE OF THE YOUNG PHYSICIAN?

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Why do young people study medicine? Are they animated by high ideals of social service or the lure of pure science or the desire for social distinction or the hope of material reward?

For two thousand years the young medical graduate has subscribed to the oath of Hippocrates, which has been kept with high fidelity by the great body of medical practitioners. Comparatively few have deserted to quackery, very few have become criminals, many have become the victims of fortuitous circumstances, social maladjustment, personal ineptitude or denial of opportunity by special social or political combinations without deserting ethical standards.

Comparative ratings place the followers of Hippocrates in the highest ranking of all professions. One hundred thousand of the 150,000 physicians in the United States are members of organized medicine as represented by the American Medical Association. Prompted by a desire for the society of their fellows, by a desire for group protection, by a desire to follow the currents of scientific thought, by a growing appreciation of the importance of political organization, physicians are joining their county medical societies in increasing numbers.

The physicians of the United States have given the people of the United States the best medical service in the world. A continuing fall in morbidity and mortality statistics refutes the arguments of those who accuse the medical profession of inefficiency. The accumulating results of preventive medicine, of immunizations, of sanitation, of protection of the public health, are radically changing the scientific fields of medical practice, while easy and rapid communication is changing its geography. Familiar acute diseases are being replaced by chronic illnesses which are incident to the physical degeneration of the increasing number of people who live beyond sixty years.

Institutional treatment is replacing home treatment. The annual report of the New York hospitals commissioner shows that at least one half of the hospital population, which is 10 per cent of the entire population of the city, relies on the medical service of municipal institutions, and these institutions are manned by physicians who work for the pay of experience even into the sixty-fifth year of their age so that they may learn how to give better care to the procession of new patients who constantly crowd these public facilities. An addition of the free care of dispensary and below-cost ward patients of the voluntary hospitals still further lessens the material attractiveness of medical practice in a large city.

Tax supported hospitals are the only hospitals that are free from the imminence of financial disaster. The voluntary hospitals are wallowing in the depths of deficits while speculating on the date when they will be forced to lose their identity and beg for tax support. Annual drives for maintenance are becoming more difficult and disheartening to generous people, who are endlessly pestered by campaign managers. How long can the major operation be deferred which will result

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11 the closing of some hospitals and a realignment of hospital service in zones designed to serve definite units of population? How long will it be before every resident of a hospital zone will carry an identification tag which will entitle him to medical care in a municipal hospital? How long will it be before physicians who work in tax supported hospitals will be paid for their work? How seriously will such an evolution affect the field of private practice? These are not fantastic questions. In all fairness they should be earnestly studied by the teachers of young people who are planning to study medicine, so that they may be competent to discuss these important economic problems with those whose careers are surely their responsibility.

Why are more and more young people trying to enter the practice of medicine when it is well known that there are now less than 800 persons to one physician and that half as many physicians die as are licensed every year? If the sources of inspiration of these young people can be discovered those whose urge originates outside of idealism or outside of the desire for real scientific study should be firmly discouraged.

Once upon a time a physician, an engineer and a politician were in earnest discussion concerning the antiquity of their professions. "Medicine is the oldest of all," said the physician. "It is recorded in holy writ that God removed a rib from Adam and created Eve. That surely was the first surgical operation." "But earlier than that," said the engineer, "God created order out of chaos—an engineering problem." "Well," said the politician, "my profession antedates both of yours. May I ask you who created chaos?"

One can hardly be accused of great disrespect if at this time in our history "chaos" looms large in our daily vocabulary. The uncertainty concerning the future of medical practice, the possibility of changes affecting all our social objectives, changes in standards of living, destruction of investment values, the shattering of traditional ideals, makes one feel that the physician of the future may turn himself into a composite picture of physician and politician if he shall have any measure of success in preserving any part of the high quality of present-day medical service or lead it to greater or higher planes.

The young physician at 27 or 28 or 30 years of age is handicapped by a lack of any fundamental knowledge or teaching of economics, and I have reason to believe that he has not been well prepared to take his place in society by instruction in the practicalities of medical problems. He has been seven or eight years in college, too busy to have business contacts outside the classroom and too concerned with abstract theory to have had time for the study of human beings as members of society. Teachers are too infrequently interested in the student's personality. Students report infrequent personal contacts, no social relations, no social inspiration. They say that their teachers assume academic detachments, platform manners or exhibition of knowledge designed to invite consultations. Too often the teacher is so absorbed in his specialty that he does not care for general contacts. He takes no interest in his county medical society, where he would meet the general run of physicians. He fails to function as a citizen. If these criticisms are correct or justified, he is unfit to develop practically useful physicians or to inspire his students with high social objectives. The exigencies of the times demand that he prepare himself for the teaching of practical economics and for the prepa-

ration of the student for his place in society. He should, above all other physicians, become active in medical organizations so that he may have first hand knowledge of present trends and present needs. The young physician should be taught something about public health, preventive medicine and especially practical medicine for the benefit of real patients.

At the December examination for internships at the Morrisania City Hospital, 190 candidates presented themselves. They represented forty-two medical schools. Forty-two of these applicants were rated by their schools at 90 per cent or above, several of them being decorated with the golden keys which marked them as scholars of distinction. Only five of these highly rated men were successful in winning places among the sixteen who were finally chosen for internships. The examining committees were instructed to ask only practical questions, in order to test the reasoning powers rather than the memory of the candidates. Sample questions are here quoted along with the appraisals of the examiners. "I asked the following question," said one examiner. "You are called to see a man 30 years old who has an inguinal hernia which is strangulated. Attempts at reduction do not avail. After examination you find that the patient has severe diabetes with impending acidosis. How would you treat this patient?" Most of the candidates answered this question by a discussion of the treatment of diabetes with acidosis, stressing the use of insulin, the dosage, and so on. Very few candidates saw the problem as a whole, nor did most of them appreciate the need for imperative surgery as a concomitant of the medical treatment. I gathered the impression that the candidates were well informed concerning the treatment of the disease diabetes (especially as an academic exercise) but that they were not trained to see the situation in its entirety as it presents itself to the physician."

Another examiner writes

Relative to our recent discussion about intern examinations and the peculiar lack of practical thought on the part of even the best of students, I call your attention to the type of questions asked by me. "1. You are called on an ambulance case and find a patient bleeding from the vagina actively. She is pregnant, near term and not in labor. What would you do?" The answers ranged from cesarean section through the entire gamut of theoretical methods. "2. You are called to treat a multipara who is in active labor, about three fingers dilated. A prolapsed cord is found not pulsating. Assume the baby dead. What would be your treatment?" Again the answers ran from version, craniotomy, embryotomy, to cesarean section. I have been asking this type of question for several years. There seems to be something wrong in the medical teaching in most of the schools. When I get a correct answer I can almost predict that the student comes from a certain school.

A surgeon asked "What are the commonest causes of rectal bleeding?" He writes

First I wanted to see how the student approached the subject, and second to ascertain whether he is trained to think of the most likely things that may cause the particular ailment. Of 100 candidates to whom this problem was presented the answers were such that after a while I could tell whether the student came from one or another type of school. One group enumerated the causes almost in exact order of occurrence, such as hemorrhoids, fissures, neoplastic growths and finally more remote factors such as ulcers in the upper part of the alimentary tract and various rarer conditions. Others began by saying cirrhosis of the liver, blood dyscrasias and other rare causal factors. A very few schools seem to train the young

mind to think along a smooth pathway and not to flounder into by-ways that lead him to think of rare rather than common etiologic factors

A urologist writes

May I state that almost all the students who appeared before our committee were, from a didactic standpoint, remarkably well prepared. I have never before encountered a group of young men whose scholarship attainments were manifestly of such high order. Consequently, it seemed to me that it might not be amiss to sound their reasoning powers. For instance, I asked several of them 'How would you conduct the case of a married man suffering from an acute gonorrheal infection?' I was not so much interested to hear of the injection of germicides but rather to determine their idea of the ethics involved, their tact in approaching such a difficult situation and their appreciation of the humanities. The gentlemen who attempted to answer my question were distinctly nonplussed. With the curriculums as complicated and time consuming as they are, it is perhaps difficult for a faculty to provide or find time for such instruction. The young medical man of today by and large, in my opinion, is distinctly disappointed when a patient, or the patient's complaint cannot be "classified." The personal element is minimized. The physician's responsibility to and for the patient is not sufficiently emphasized and a spirit of genuine sympathy for suffering is not inculcated as a fundamental principle.

As a result of this type of questioning, the representatives of nine schools won the first sixteen places: Bellevue five, Columbia two, Cornell one, Creighton one, Flower two, Jefferson 1, Long Island two, Rush one, Tufts one. The sixteen alternates came from six schools: Bellevue five, Columbia two, Flower four, Baylor two, Rush two, Boston one. It would seem to be a reasonable inference that these schools are trying to develop clinicians. It may also be of interest to note that none of these thirty-two candidates were personally known to the examiners.

At the Morrisania Hospital we became so impressed with the lack of the practical training among our forty interns and residents that we initiated some procedures during the past three years which were warmly welcomed by the interns, who are frequently suggesting other ways in which they may learn how to meet the actualities of medical practice. Every new intern is given a complete physical examination and is advised as to measures designed to correct physical defects. It seems strange to discover among these persons who have been eight years in college, serious visual defects which were seriously affecting their ability to work without undue fatigue, to find an advanced case of leukemia, and some others with tuberculous lungs. A review of college records of annual physical examinations shows no blood counts or roentgenograms of the chest. We instituted a course in ordinary nursing procedures, with demonstrations of bed making, bathing, enemas, mustard plasters, hypodermoclyses and so on. No intern is allowed to ride an ambulance until he has been instructed in practical first aid measures and is taught how to treat the ordinary emergencies which he may meet.

Frequent meetings are held to give interns opportunities to ask questions of the administrative staff, all of whom are cordially cooperative. As an outcome of their expressed desire for practical education and at their direct request, practical lectures are given on forty Wednesday afternoons during the year, which are attended by all interns who can be freed for an hour from their ward services. Questions are asked and both lecturers and interns report that the time is profitably spent. These lectures are not substitutes for the regular medical surgical, pathologic, x-ray and

ward conferences, at which the heads of every service are putting an emphasis on useful procedures and trying to make the intern self reliant in the exercise of his five senses and his powers of deductive reasoning. To promote this experience, every intern is also required to meet ambulatory patients in the outdoor clinics under the direction of members of the staff, who are trying to teach a practical application of medical knowledge which might be useful in the regular office experience of the ordinary practitioner.

We might all do well to follow the example of Sir William Osler in personal contacts with students and interns, his stimulating push toward a good impulse, which brought his school to so high a place. Thayer's paraphrase of Osler's advice to his students may be profitably remembered.

Observe, record, tabulate, communicate. Use your five senses. The art of the practice of medicine is to be learned only by experience, it is not an inheritance, it cannot be revealed. Learn to see, learn to hear, learn to feel, learn to smell and know that by practice alone you can become expert. Medicine is learned at the bedside and not in the class room. See and reason and compare and control. But see first. No two eyes see the same thing. No two mirrors give forth the same image. Let the word be your slave and not your master. Live in the ward.

We are aware that the only thing new about our program at the Morrisania Hospital is that our visiting and attending staff is functioning in it and that our interns are liking it. While we have been talking a great deal about preserving the social qualities of the old general practitioner, we must admit that a few schools have been quietly producing better general practitioners than we have ever known. The hospital may do something to promote sound practice, but the development of clinicians who will be valuable social agents must begin with the admitting committees at the colleges and continue vigilantly through every undergraduate year. Occasional lectures will have small value. The entire corps of teachers must be imbued with a keen appreciation of their own social responsibility and must transmit the spirit of it to their students. The faculties that do not teach practical medicine are perhaps in some degree responsible for the wave of machine shops which young physicians are setting up all over the country. Failing inspirational influence, the social objective of some young physicians seems to place material gain above service to the sick. They continue their education under the seductive eloquence of salesmen for machinery and drug houses and go deeply into debt, mortgaging their futures for several years of instalments, which must be retrieved from credulous patients, who are put through the whole show of unnecessary x-ray, fluoroscopic, electrocardiographic, lamp and mechanical tests with which the physician himself is only faintly acquainted. It is an amazing experience to walk into the office of a recent graduate and realize, by quick computation, that some one is backing an investment of from three to five thousand dollars or more in mechanical equipment. It is reasonable to fear that these young physicians are in danger of slipping into the mire of quackery, are sacrificing ideals to expediency, and are also creating an impression in the minds of patients that physicians who do not possess these elaborate instruments are consequently incompetent to make diagnoses or to advise up-to-date therapy.

Is this unsocial conduct merely a phase of practice that will destroy itself by lowering popular respect for these instruments through their indiscriminate and unskilled use? Will it need the disapproval of medical organizations? Will it need public education? It seems obvious that machines and gadgets must be subordinated to intelligence and a revival of common sense. Censorship or ostracism will not cure a disease that is grown on weak characters and fostered by ignorance or a myopic conformity to local custom. Many of us become virtuous when we grow too old to have personal ambitions and forget that human nature seldom scorns acquisitiveness in the presence of opportunity. While employing all the progressive results of scientific research, let us not forget the sound lessons of the past and let us try to encourage our highly educated young physicians to take the places of leadership in community life for which they are potentially qualified. The young physician's social objective may not point higher than making an honest living, but if this aspiration is based on respect for a high quality of service the health of our people will be in safe hands.

The development of this objective lies in the hands of those who are privileged to carry on the teaching of advanced students

1 They must educate themselves by active membership in medical organizations

2 They must select fewer medical students with severer scrutiny of character qualifications

3 They must carry on intensive teaching of clinical medicine

4 They must promote inspirational preceptorial contacts between teacher and pupil

5 They must try to develop medical citizens whose education will entitle them to leadership in their communities

It is my personal belief that raising the level of the practical education of all young physicians and attempting to impress them with their civic responsibility will strengthen their ability to handle all their social and economic problems

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Basophilic Adenoma—The syndrome associated with basophilic adenoma of the pituitary as described recently by Cushing was characterized by: (1) a rapidly acquired, peculiarly disposed, and usually painful adiposity confined to the face, neck, and trunk, the extremities being spared, (2) a tendency to become round shouldered even to the point of a measurable loss of height associated with lumbospondyl pains, (3) a sexual dystrophy shown by early amenorrhea in females and ultimate functional impotence in the male, (4) an alteration in normal hirsuties shown by a tendency to hypertrichosis of face and trunk in females and adolescent males, and possibly the reverse in the adult males, (5) a dusky or plethoric appearance of the skin with purplish linear atrophicae particularly marked on the abdomen, (6) vascular hypertension, (7) a tendency to erythremia, (8) variable brachias, abdominal pains, fatigability and ultimate extreme weakness. The features less often noticed were acrocyanosis, purpura like ecchymoses, aching pains in the eyes associated with exophthalmos, transient diplopia, suggestive papilledema, dimness of vision, subretinal exudate and retinal hemorrhage, extreme dryness of the skin, pulmonary infections, albuminuria, insomnia, increase of non-protein nitrogen and cholesterol in the blood and polymorphonuclear leukocytosis.—Baumgartner, Leona. Pituitary Basophilism and Hypertension. *Lab. J. Biol. & Med.* 7: 327 (March) 1935

RECURRENCE OF INOCULATION MALARIA

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It is generally thought that tertian malaria transmitted by direct blood inoculation is easily cured by quinine. According to James,¹ "clinically there is a striking difference between the two classes in that true (long interval) relapses and recurrences are not observed (so far as we can ascertain) in inoculated cases, while they occur in 50 per cent of mosquito infected cases." He adds that blood inoculated cases are cured by a single short course of quinine. Yorke² concurs in this view, saying "it is an established fact that two or three doses of quinine almost invariably suffice definitely to cure the inoculated case." Wagner-Jauregg³ relates that in Vienna, where more than 6,000 patients have been treated, no case of recidivation has been noted. He considers 5 Gm of quinine, given in the course of a week, sufficient to cure the disease.

Although few in number, recurrences have been recorded. Redlich⁴ observed one following the administration of 3 Gm of quinine. Grant and Silverston⁵ noted two cases after 6 and 4 Gm respectively. The first occurred forty-two and the second eighteen days after termination. Serafinow⁶ had one recurrence in a series of forty-two cases treated. Kulagin and Petrasov⁷ refer to a case reported by Luntz in which malaria was present in the blood for more than three years, and they add one of their own.

Between August 1927 and February 1935 a total of 261 patients were treated with inoculation (tertian) malaria in the St. Peter State Hospital. Usually the chills terminated promptly when quinine was administered, but the plasmodium often remained in the circulation long afterward.

In fourteen cases the parasite was found in thin smears from six to 150 weeks after the fever subsided. These patients had received from 5.3 to 97 Gm of quinine sulfate orally. The average amount was 44 Gm. With one exception these recidivations occurred between the seventieth and the one hundred and sixtieth direct passage of the strain.

Malarial parasites remained in the blood of one of these patients for six weeks, after which they disappeared. A smear made in a routine way 150 weeks after termination was positive, but several subsequent smears were negative. No clinical symptoms were noted at the time. Beginning in the one hundred and eightieth week, the patient showed symptoms strongly suggestive of malaria, but the plasmodium could not be found in the blood.

Nine other patients had definite recurrence of the disease during which the parasite was found in the circulation. Relapses also were observed in two patients treated elsewhere. These eleven cases are reported.

1 James S. P. Some General Results of a Study of Induced Malaria in England. *Tr. Roy. Soc. Trop. Med. & Hyg.* 2: 477 (March 6) 1931.

2 Yorke Warrington in discussion of James.¹

3 Wagner-Jauregg, Julius. Inwiefern besteht eine Gefährdung der Umgebung durch therapeutische Malaria? *Wien. klin. Wchnschr.* 46: 705 (June 9) 1933.

4 Redlich, Emil. Ueber larvierte Malaria nach Malariaabehandlung bei progressiver Paralyse nebst Bemerkungen ueber einen moeglichen Zusammenhang zwischen Epilepsie und Malaria. *Wien. klin. Wchnschr.* 37: 134 (Feb. 7) 1924.

5 Grant A. R. and Silverston J. D. The Wittingham (W.) Strain of Artificially Induced Malaria. *J. Trop. Med. & Hyg.* 29: 117 (April 15) 1926.

6 Serafinow, B. H. Recidivation of Malaria After Its Use as Therapeutic Measure. *Soviet vrach gaz.* April 30 1932 p. 477.

7 Kulagin S. M. and Petrasov V. F. Therapeutic Malaria as a Factor in Spreading Malaria. *Soviet vrach gaz.* April 30 1934 p. 606.

REPORT OF CASES

CASE 1—G A O, a white man, aged 56, a native of Sweden, was inoculated (twenty-third passage) Nov 5, 1928. Between the 10th and the 21st of November he had seven irregular rises in temperature. The fever terminated spontaneously on the latter date. He was given 1 Gm of quinine sulfate daily from November 28 until December 3, inclusive.

No untoward symptoms were noted until ninety-three weeks later, when on Sept 17, 1930 he complained of abdominal distress. The temperature, which was elevated every forenoon, did not return to normal until October 29. Although 1 Gm of quinine sulfate was given daily for a period of forty-two days, blood smears remained positive for malaria until October 22. After that they were negative. The patient developed pneumonia and died on Feb 7, 1931. No microscopic examination was made of the blood at the time.

CASE 2—M C, a white woman, aged 30, a native of Czechoslovakia, was inoculated (sixty-eighth passage) Feb 13, 1931. After five chills, the first of which occurred February 24 and the last March 6, the fever terminated spontaneously. As malarial parasites persisted in the circulation, quinine medication was commenced March 13. From then until October 1 she was given 1 Gm of quinine sulfate daily. On the latter date the dosage was increased to 2 Gm. This was continued until November 14 when it was decreased to 1 Gm. The medication was discontinued November 17. During this time a total of 293 Gm was administered. The temperature curve began to show irregularities May 4. There were elevations every day or every other day, with occasional sharp peaks reaching a maximum of 102 F. Blood smears remained positive for malaria until September 2. In May 1935 the patient showed symptoms strongly suggestive of malaria, but the plasmodium could not be found in the blood.

CASE 3—M B, a white man, aged 50, a native of Minnesota, was inoculated (eightieth passage) Sept 11, 1931. The course was terminated after nine chills, the first of which occurred September 21 and the last October 1. Between the latter date and December 8 the patient was given 1 Gm of quinine sulfate daily. Blood smears remained positive for malaria, however, and the patient had severe chills November 30 and December 1. The temperature remained normal from then until December 8 when another severe chill occurred. The quinine was then increased to 2.65 Gm daily. The temperature remained normal until the patient left the hospital Dec 22, 1931. Unconfirmed reports indicate that there were recurrences later, but this could not be verified. Although 107 Gm of quinine was administered, malaria was present in the blood Dec 17, 1931, when the last examination was made.

CASE 4—A H, a white man, aged 28, a native of Minnesota, was inoculated (seventy-eighth passage) Aug 8, 1931. The first of ten paroxysms occurred on the 14th and the last on the 29th of August. Between the latter date and September 10 a total of 16 Gm of quinine sulfate was given. The patient remained well for fifty-eight weeks until Oct 8, 1932, when he commenced to have an elevation in temperature every other day. Malarial parasites were found in the blood. A total of 13 Gm of quinine sulfate was given during a period of twenty days. The temperature remained normal after October 7 but the plasmodium persisted in the circulation until November 10. A blood smear made in a routine way Sept 29, 1934, was negative. The patient died Jan 2, 1935. No examination was made of the blood at the time as the symptoms were not suggestive of malaria.

CASE 5—F A E, a white man, aged 46, a native of Minnesota, was inoculated (one hundred and fifth passage) April 25, 1933. The first of eleven chills occurred on the 10th and the last on the 27th of May. From May 26 until June 20 inclusive, 1 Gm of quinine sulfate was given daily. No malarial parasites were found in the blood June 16. The patient remained well for thirty weeks, until Jan 16, 1934, when he commenced to have fever and chills. The plasmodium was found in the blood January 22. Between the latter date and April 3 the patient was given 41 Gm of quinine sulfate. The temperature did not become normal until February 23 when he was given 0.75 Gm of neosarsphenamine intravenously. During this period the patient had sixteen distinct chills. Malarial parasites were present in the blood up until and including February 16 but

were not found later. A blood smear made in a routine way Sept 29, 1934, was suggestive of malaria, but several subsequent smears were negative. The patient was transferred to another hospital May 31, 1935.

CASE 6—G H P, a white man, aged 43, a native of Minnesota, was inoculated (twentieth passage) Aug 17, 1928. The first of eight chills occurred August 24 and the last September 5. During the following seventeen days, 1 Gm of quinine sulfate was given daily.

The patient remained well for 146 weeks, until June 29, 1931, when he suffered a heat stroke. The temperature returned to normal in the course of seven days. No microscopic examination was made of the blood at the time.

No further symptoms were noted until 311 weeks after termination, when on Sept 1, 1934, typical symptoms of malaria developed and the plasmodium was found in the blood. Between the 2d and the 28th of September he was given 22 Gm of quinine sulfate. Although the temperature became normal September 9, blood smears remained positive until September 29. On account of the suggested periodicity, the temperature was observed during April 1935. It was slightly elevated every forenoon, but blood smears were persistently negative for malaria.

CASE 7—M N, a white man, aged 38, a native of Finland, was inoculated (fifth passage) Oct 11, 1927. The first of twelve chills occurred October 20, the last November 10. During the following twelve days, 1 Gm of quinine was given daily. No microscopic examination was made of the blood after the fever subsided. A blood smear made in a routine way Sept 9, 1934, was very suggestive of malaria, but several subsequent smears were negative. There were no symptoms suggestive of malaria at the time.

The patient remained well for 374 weeks after termination, until Jan 21, 1935, when he commenced to have daily elevations in temperature. Examination showed pleural effusion on the right side. Roentgen examination of the chest made during a general survey about two months previously showed no abnormalities. Malaria was found in the blood, February 6. Although the temperature decreased when quinine was given, it did not return to normal. In June the fever became more marked and the patient died, June 24, 1935.

CASE 8—B S, a white man, aged 46, a native of Germany, was inoculated (sixth passage) Oct 29, 1927. The first of ten chills occurred on the 6th and the last on the 21st of November. He was then given 53 Gm of quinine sulfate within a period of six days.

The patient remained well for 382 weeks, until March 27, 1935, when he commenced to have chills and fever. At first the plasmodium could not be found in the blood, but after the patient had several chills the smears became positive. He was given 14 Gm of quinine sulfate during the first week in April and 73 Gm during the second. The temperature, which had returned almost to normal, rose again when the quinine was discontinued. Beginning April 25, 0.1 Gm of atabrine was given three times a day over a period of seven days. This controlled the fever temporarily, but there was a recurrence of chills when it was discontinued. Between the 4th and the 8th of May, 12 Gm of quinine sulfate was given. From May 11 until July 23 2 Gm was given daily. On the latter date quinine hydrochloride was substituted. This was reduced to 1 Gm daily August 10 and discontinued September 14. Between July 25 and September 11 he also received fourteen intravenous injections of 0.45 Gm of neosarsphenamine. Although the temperature remained normal most of the time after the neosarsphenamine was commenced, it would increase if the interval between injections was more than four days. There were occasional sharp elevations up until October 4.

The patient received a total of 181 Gm of quinine sulfate, 71 Gm of quinine hydrochloride, 21 Gm of atabrine and 63 Gm of neosarsphenamine.

CASE 9—M P, a Negress, aged 20, a native of Alabama, was inoculated (eighteenth passage) Dec 3, 1934. The first of three prolonged paroxysms occurred on the 11th and the last on the 17th of December. Following this the temperature remained normal until December 26 when it commenced to show irregularities. Slight increases were noted every day or every other day. Broken by occasional afebrile periods, this continued during the winter. From December 15 until

January 8, 1 Gm of quinine sulfate was given daily. On the latter date the dosage was doubled. The amount was again reduced to 1 Gm daily, February 21. This was continued until April 3, when it was increased to 3 Gm daily. Blood smears were positive January 7 but negative January 16 and February 21. A positive smear was again obtained April 3. March 31 the temperature became markedly elevated. Examination showed pleural effusion. The patient died, April 6, 1935. The total amount of quinine administered was 124 Gm.

CASE 10—E C M, a white man, aged 49, a native of Minnesota was inoculated in the Ancker Hospital St Paul, Aug 5, 1933. The temperature showed daily elevations between the 7th and the 15th of August inclusive. On the latter date 1 Gm of quinine was given intravenously. This was repeated the following day. He was then given 2 Gm orally for three days and 1 Gm for four days. The temperature became normal on the 15th.

The patient was transferred to the St Peter State Hospital, Aug 30, 1933. September 5 he had another paroxysm lasting four days. He had chills again on the 9th and the 10th. The temperature remained normal after the 11th. Malarial parasites were found in the blood, September 7. The patient died, Sept 13, 1933.

CASE 11—J J E, a white man, aged 50, a native of Minnesota, a patient of Drs Hammes and Kamman of St Paul, was inoculated May 7, 1935. The chills, which commenced on the 11th, were terminated on the 21st of May. Between then and July 12 he was given 80 Gm of quinine hydrochloride. In spite of that, chills occurred on the 7th, 17th, 28th and 30th of June and again on the 9th and 10th of July.

The patient was admitted to the St Peter State Hospital, July 12, 1935. Between the 13th and the 16th of July he was given 365 Gm of quinine sulfate orally and 0.45 Gm of neoarsphenamine intravenously. There were recurrences of chills on the 15th, 18th and 19th of July. Commencing July 16, 0.1 Gm of atabrine was given three times a day for seven days. The temperature became normal on the 20th but rose sharply on the 23d and again on the 28th. The latter elevation was prolonged, lasting until July 31. Beginning on this date, 13 Gm of quinine sulfate was given daily until August 13, when the amount was reduced to 1 Gm. The same day he was given 0.45 Gm of neoarsphenamine intravenously. As the patient again had chills on the 18th, 19th and 20th of August, the amount of quinine was doubled on the latter date and 0.45 Gm of neoarsphenamine was given intravenously every fourth day. Since then the temperature has remained below 100 F except on August 27, when it rose to 100.4 F. The amount of quinine was reduced to 1 Gm daily October 23 and was discontinued November 4. Malarial parasites were found in the blood July 15 but have not been found since. A total of 80 Gm of quinine hydrochloride, 100 Gm of quinine sulfate, 21 Gm of atabrine and 765 Gm of neoarsphenamine was administered.

COMMENT

Four apparently unrelated strains were involved in this series of recurrences. One strain was used for inoculations in the first eight cases, while a different strain was used in each of the last three cases. As it could not be ascertained how often the strains had been transmitted previously, the numbers refer to the passages undergone in our hands.

During this period only three cases of noninoculation malaria were observed in the hospital. A definite history of previous attacks was obtained in each case. Since malaria is not endemic in Minnesota and the patients were under constant observation in hospitals, reinfection is not probable.

There is a suggested periodicity in these recurrences. The time in one case was thirty weeks and in five cases a multiple of from twenty-nine to thirty-one weeks. A similar time relation was noted in several cases of suspected recurrence in which the plasmodium could not be found in the blood.

Frequently it was necessary to make a number of smears before the parasite could be demonstrated. The

temperature curve was more irregular during the recurrence than it was in the initial attack. At times it bore little or no resemblance to that generally described in textbooks.

A review of all the cases treated here convinces us that several recurrences were not recognized as such. The death of one patient, several months after leaving the hospital, undoubtedly was caused by malaria. The symptoms, later described by relatives, were typical of the disease.

These observations support the contention of Martin⁸ that inoculation malaria does not differ from that transmitted by the mosquito. We believe that a systematic search for the plasmodium in all malaria treated individuals having fever from any cause will reveal a number of unsuspected recurrences. Furthermore, the possibility that recidivation of inoculation malaria may be a factor in the spread of the disease deserves serious consideration.

EXPERIMENTAL THERAPY IN COCCIDIOIDAL GRANULOMA

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In the therapy of coccidioidal granuloma numerous agents have been suggested since the first case was described by Rixford¹ in 1894. He used potassium arsenite, potassium iodide and yellow mercurous iodide internally and iodine, bromine, phenol, methyl violet, turpentine and mercury bichloride locally, without success. Subsequent writers have run the gamut of chemical, physical and immunologic agents. Montgomery and Ormsby² recommended general supportive measures as in the therapy of tuberculosis. Brown,³ Brown and Cummins⁴ and Burgess⁵ have suggested the use of iodides, and Cooke⁶ has suggested their use in conjunction with arsphenamine.

Antimony in the form of antimony and potassium tartrate has been used by a number of investigators. Guy and Jacob⁷ used it in conjunction with x-rays with apparent success but were unable to carry out animal experiments owing to the peritonitis developing from the injection of antimony and potassium tartrate, an experience which we can verify. Tomlinson and Bancroft⁸ used it in conjunction with x-rays, with an apparent cure. Childrey⁹ used antimony and potassium tartrate with potassium iodide without success. Chipman and Templeton¹⁰ used it in conjunction with

8 Martin E. Grundsatzliches zur therapeutischen Malaria. *Dermat Wehnschr* 95: 1548 (Oct 22) 1932.

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1 Rixford. *Occidental M Times* 8: 326 and 704, 1894.

2 Montgomery F H and Ormsby O S. *Systemic Blastomycosis*. *Arch Int Med* 2: 1 (Aug.) 1908.

3 Brown P K. *Coccidioidal Granuloma*. *J A M A* 18: 743 (March 2) 1907.

4 Brown P K and Cummins W T. A Differential Study of Coccidioidal Granuloma and Blastomycosis. *Arch Int Med* 15: 608 (April) 1915.

5 Burgess J F. *Brit J Dermat* 41: 145 (April) 1929.

6 Cooke Jean V. Immunity Tests in Coccidioidal Granuloma. *Arch Int Med* 15: 479 (March) 1915.

7 Guy W H and Jacob F M. *Granuloma Coccidioides*. *Arch Dermat & Syph* 16: 308 (Sept.) 1927.

8 Tomlinson C C and Bancroft Paul. *Granuloma Coccidioides*. *J A M A* 91: 947 (Sept 29) 1928.

9 Childrey J H and Gray P A. *California & West Med* 37: 250 (Oct.) 1932.

10 Chipman E D and Templeton H J. *Coccidioidal Granuloma*. *Arch Dermat & Syph* 21: 259 (Feb.) 1936.

potassium iodide, aqueous solution of iodine, colloidal copper, typhoid vaccine and gentian violet without success. Jacobson¹¹ has discarded antimony and potassium tartrate in favor of colloidal copper and a vaccine prepared from cultures, together with carbon dioxide snow and x-rays locally, and with supportive therapy, reporting quite favorable results. Jaffe¹² also has used colloidal copper in conjunction with bismuth potassium tartrate and reported some improvement. Sorsky and Nixon,¹³ after a trial of antimony and potassium tar-

reached the ultimate cure but rather one of hope that the results will be as good subsequently as shown at the time of the report.

The purpose of this investigation is to attempt, by animal experimentation, to evaluate the various types of drug therapy suggested for the treatment of coccidiodal granuloma.

Guinea-pigs were weighed and given the selected therapeutic agent for from five to ten days before inoculation. They were then inoculated with 0.1 cc of a suspension of coccidioides culture into the testicle and the treatment was continued daily thereafter. The culture was the most virulent of the Stanford collection (No. 10), having a twenty day virulence by intra peritoneal inoculation as tested three months prior to the experiment. It had been subcultured twice in the interval. The same strain was used throughout the experiment and no animal failed to develop the disease. From seven to ten day surface cultures on Sabouraud's medium were washed with physiologic solution of sodium chloride into impules and shaken with glass beads, in order to obtain a uniform suspension, and were then inspected microscopically to insure that fragmentation was complete.

The drugs were given intraperitoneally in estimated effective sublethal doses, with the exception of thymol, which was given by gavage because of its insolubility in water, and the vaccine, which was given subcutaneously. Table 1 shows the drugs used, their dosage, the number of animals and the length of life after inoculation.

Copper sulfate and antimony and potassium tartrate were found to be so irritating that several guinea-pigs were lost prior to inoculation before the optimal dose could be determined. The dosage was constant except in the case of thymol, in which the first and third pigs were given 60 mg per kilogram and the remainder 125 mg, with little difference in the results obtained. Colloidal copper was given three times a week, the total weekly dose being the same as the human dose per kilogram.

The vaccine was prepared by growing the organism in a synthetic medium introduced by Stewart and Meyer²² for isolating coccidioides from soil. Its com-

TABLE 1—Length of Life After Inoculation with Various Drugs

Drug	Gm per Kg	Number	Days
Copper sulfate	0.0015	5	620
Antimony and potassium tartrate	0.01	3	1114
Potassium iodide	0.7	3	1618
Lead acetate	0.012	4	914
Thymol	0.06 to 0.125	9	2165
Mercuric cyanide	0.0002	3	1118
Novarsol	0.4 ml	3	1119
Potassium bismuth tartrate	0.012	3	1118
Iodobismutol	0.06 ml	3	1122
Colloidal copper	0.3 ml	2	1415
Sodium thiosulfate	0.25	3	819
Potassium iodide and thymol	Above	1	17
Vaccine	0.5 ml	4	827
Control	None	7	1221

trate, methyl violet, gentian violet, potassium iodide, colloidal copper and "Bismoid" internally, with gentian violet and saturated solution of iodine in 5 per cent potassium iodide locally, have concluded that bismuth, copper and gentian violet internally warrant further clinical trial, and that gentian violet irrigations locally give satisfactory results in some cases.

Cummins and Sanders¹⁴ tried crystal violet without success and carried out a few animal experiments without definite results. Pulford and Larson¹⁵ report a case in which they used potassium iodide, potassium arsenite, a vaccine, colloidal lead, colloidal copper, high voltage therapy and gentian violet without success. Montgomery and Morrow¹⁶ tried x-rays without success, but Zeisler¹⁷ obtained some improvement but not a cure with x-rays. Hammack and Lacey¹⁸ amputated an infected extremity and report a cure, and Imerman¹⁹ excised a lesion with the actual cautery.

Myers²⁰ found thymol, carvacrol, its isomer, and the volatile oils of mustard, cinnamon and clove active fungicides, particularly for yeasts. Thymol was also active against actinomyces. Stockton²¹ found, in vitro, that 0.5 per cent concentration of thymol was effective in inhibiting the growth of coccidioides cultures, and he gave thymol to a patient in doses up to 2 Gm daily until 21 Gm was given in a ten day period without definite beneficial results. He found that the average daily excretion of thymol was 55 per cent of the daily dose but that it was quite variable, possibly owing to the variability in absorption.

In none of the articles reviewed does one receive the impression that the investigator feels that he has

TABLE 2—Composition of Vaccine

Ammonium carbonate	10
Sodium acetate	10
Monobasic potassium acid phosphate	0.2
Dibasic potassium acid phosphate	0.2
Magnesium sulfate	0.01
Distilled water	100.0

position is as given in table 2. After thirty days' growth the culture was centrifuged, washed with physiologic solution of sodium chloride, moistened with salt solution, ground for forty-eight hours in a ball mill, filtered through a Seitz filter and tested for sterility by culture and inoculation. It was then given subcutaneously for an average of seventeen daily doses prior to inoculation. No vaccine was given after inoculation in the hope of demonstrating the development of some immunity or increased resistance to invasion.

The experiment was begun with no preconception as to the efficacy of any one drug but with the hope that some valuable data might be accumulated in a general survey of all the suggested therapeutic agents.

11 Jacobson H P Coccidiodal Granuloma Arch Dermat & Syph 21 790 (May) 1930
Fungous Diseases Springfield Ill Charles C Thomas 1932

12 Jaffe R H Virchow's Arch f path Anat 278 42 1930

13 Sorsky E D and Nixon C E California & West Med 42 98 (Feb) 1935

14 Cummins W T and Sanders J J M Research 35 243 (Nov) 1916

15 Pulford D S and Lar on E E Coccidiodal Granuloma J A M A 93 1049 (Oct 5) 1929

16 Montgomery and Morrow J Cutan Dis 22 368 1904

17 Zeisler E P Chronic Coccidiodal Dermatitis Arch Dermat & Syph 25 52 (Jan) 1932

18 Hammack Roy and Lacey J M California & West Med 22 224 (May) 1924

19 Imerman S W and Imerman C P Southwestern Med 17 18 (Jan) 1925

20 Myers H B and Thienes C H The Fungicidal Activity of Certain Volatile Oils and Stereoptens J A M A 84 1985 (June 27) 1925

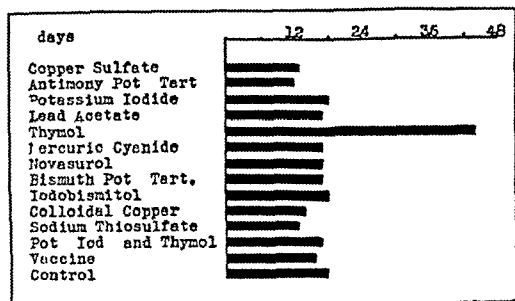
21 Myers H B An Unappreciated Fungicidal Action of Certain Volatile Oils ibid 85 124 (Nov 26) 1927

22 Stockton A B California & West Med 31 278 (Oct) 1929

22 Stewart R A and Meyer K F Proc Soc Exper Biol & Med 29 937 (May) 1932

The accompanying chart strikingly summarizes the results obtained

The first guinea-pig that was treated with thymol was killed sixty-five days after inoculation, although in good health, in order to see whether a cure had been effected, but a well walled off lesion was discovered. Subsequent studies were concentrated more on this drug, with a result that all the experimental animals were found to live longer than the controls, the only drug in which this result occurred



Results of experiment

During the course of the animal experimentation, a patient entered Stanford Clinic and Lane Hospital with coccidioidal granuloma and was made available for study

REPORT OF CASE

A F, an Italian dairyman, complained of a boil on the neck of three months' duration

The family history was not significant

The patient had been in the United States for nine years near Fresno in the San Joaquin Valley

Nine months previously he had had chills and fever, which subsided in three weeks. Six months previously pain developed in the neck in the region of the seventh cervical vertebra, radiating down the left arm. The left arm gradually became weaker until he was unable to use it.

Five months before entry a swelling developed on the left side of the neck, gradually increasing in size, without pain, but with some limitation of motion of the neck.

Two months prior the abscess was opened by a local physician, with persistent drainage thereafter. The pain in the arm was somewhat relieved but the weakness persisted.

He lost 60 pounds (27 Kg.) in nine months.

On physical examination the patient was well developed and fairly well nourished. There was a diffuse swelling and induration to the left side of the neck posteriorly, with a draining sinus opening from which exuded yellowish white purulent material containing the typical spherules of coccidioides, which gave positive results on culture and animal inoculation.

There was weakness of the left arm but no atrophy.

Results of the laboratory examination were: red blood cells, 5,000,000, hemoglobin, 90 per cent (Sahli), white blood cells 5,000, 81 per cent polymorphonuclear leukocytes and 1 per cent eosinophils. The blood Wassermann reaction was negative, and the urine was normal.

Röntgen examination showed destruction of the fifth sixth and seventh cervical vertebrae, with a large communicating sinus tract demonstrated after injection with potassium iodide solution.

Print fibrous fuzzy densities in the midlower portions of both lung fields were interpreted as evidence of lung involvement.

On entry potassium iodide was given in gradually increasing dosage until the patient was receiving 20 Gm daily with no evidence of improvement and continued loss of weight. Twenty-one days after entry thymol therapy was instituted. The sinus was washed out daily with dilute tincture of green soap and then 5% per cent thymol in olive oil was instilled through a catheter introduced to the bottom of the sinus. From that time no organisms could be isolated from the pus and there was a definite improvement in the appearance of the lesion. When a stronger solution (50 per cent) was used there was some pain referred down the arm.

At the time the irrigations were started, thymol was given by mouth starting with 1 Gm and gradually increasing to 6 Gm daily until a total of 104 Gm had been given in twenty-four days. The thymol was dissolved in olive oil in 50 per cent concentration and placed in capsules, which were administered during the meal in order to promote absorption and minimize gastric irritation. While the urine had a strong odor of thymol, no evidence of kidney damage could be discerned at this dosage. The loss of weight stopped after thymol was begun and the patient felt subjectively improved. The only unfavorable effect noted was a slight abdominal distress when the larger doses were taken, which persisted for about twenty minutes.

Owing to lack of funds, longer observation was not possible and the patient went to another part of the state, where information was no longer available.

SUMMARY

In a general survey of the agents used in the treatment of coccidioidal granuloma, eleven drugs and a vaccine were tested in the experimental animal, of which only thymol was found to give any definite favorable result.

In applying thymol in human cases, a dose of 6 Gm daily is well tolerated.

The local and systemic application of thymol in human coccidioidal granuloma was followed by encouraging results, and further application and study of thymol in this disease is indicated.

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Clinical Notes, Suggestions and New Instruments

GAS INFECTION AFTER HYPODERMOCLYSIS

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In 1933 Junghanns¹ analyzed more than sixty cases of gas gangrene that followed hypodermic medication of all types. To this report he added a single case of his own. This literature was made available to him after the plea by Anschütz in 1926 at the German Surgical Congress for reports and investigatory attempts at localizing the cause of this dangerous sequela to hypodermic medication. It is interesting to note that all possible factors involved in the giving of a hypodermic injection have been studied bacteriologically, yet rarely has the organism been recovered from the carrier agent. The wounds in all cases, however, have yielded the gas organism. Attempts to trace the gas bacillus to the hands of the administrator (nurse or doctor), the skin of the patient, the needles, the solution, the method of sterilization and any other conceivable source has usually been unsuccessful. In Junghanns' series men were more frequently affected than women. The age incidence in the majority of cases occurred during the third to fifth decades of life. The site of infection in the greatest number of cases (twenty-seven) occurred in the thighs. Hilgenfeld reported a case in which gas gangrene developed in both thighs after a hypodermoclysis. The following solutions named in the order of frequency were associated with the postinjection complication: (1) caffeine, (2) epinephrine, (3) physiologic solution of sodium chloride, (4) morphine and a number of lesser offenders. Of all these cases only four survived this catastrophe. The nature of the illness before the onset of this complication varied from all types of medical diseases to the usual variety of surgical procedures.

The pathogenesis of gas infection after hypodermoclysis is a local pressure ischemia caused by the solution itself. This, coupled with an endogenous lowered resistance and an introduction of the infective organism from an exogenous source, can account for the resultant gas infection. It has been shown

From the Surgical Service of the Kings County Hospital and Harbor Hospital.
¹ Junghanns H. Gas Gangrene Caused by Injection of Medicament. Deutsche med. Wchnschr. 59: 850 (June 2) 1933.

experimentally that the injection of gas bacilli into a particular area the main arterial branch of which is ligated will more readily yield to gas gangrene than a similar area the blood supply of which is undisturbed. It is also to be noted that the use of vasoconstrictors (epinephrine) causing local ischemia or protoplasmic coagulants (caffeine, quinine) producing areas of necrosis predispose to subsequent infection.

The senior author of this report has considered the site of injection for infusion an important factor for infection. He has required from his service associates that all clyses be given in the axillary region. It is his contention that an injection in the thigh, because of its proximity to the genitals and anus, is a decisive threat for gas infection. Junghans figures sustain this thought. Nevertheless, gas gangrene may occur after any hypodermic injection anywhere in the body. We have tried to reduce to a minimum all other sources for infection by impressing on our house staff that every infusion be treated as a surgical operation requiring all the usual aseptic operative maneuvers.

REPORT OF CASES

CASE 1—H. P., a man, aged 60, was admitted August 17 with complaints referable to his stomach. X-ray studies indicated an obstructing pyloric ulcer, for which an operation was performed August 27. The following notes describe the course of events following a posterior gastro-enterostomy.

August 27. Temperature 100. Postoperative reaction good. Patient received two clyses into the thighs.

August 28. First postoperative day. Temperature 105. Pulse 120. General condition is weak this morning.

August 28, 2 25 p. m. General condition good. Patient improved. No distention. Patient complains of pain in the left thigh. Anterior aspect of left thigh edematous and rather tense. Subcutaneous crepitus is probably due to air from clysis needles. Will observe for infection.

August 28, 11 30 p. m. Patient has a remittant temperature from 101 to 105. Complains only of pain in left thigh. Receiving clysis in axilla now. No abdominal distention. Wet dressing to left thigh. Culture of wound taken and sent to laboratory.

August 28, midnight. The infection is rapidly spreading. Crepitation is marked over whole left thigh and up to Poupart's ligament. Extensive brawny induration from Poupart's ligament down to foot. Clinical picture is that of a gas infection. Condition of patient is critical.

August 29, 2 a. m. Small incisions about 3 inches long made over anterior aspect of thigh under procaine hydrochloride anesthesia. Large amount of foul smelling gas escaped through incisions. Gas antiserum given intravenously. Patient died 2 20 a. m., August 30.

CASE 2—Mrs. M. C., aged 38, was admitted July 6 because of gallstones. Cholecystectomy was done July 28. Postoperatively she received daily hypodermoclyses of 1,000 cc of 5 per cent solution of dextrose. August 1 she showed on the outer side of the right breast a gangrenous area about 3 inches in diameter. Crepitation was present and extended toward the sternum. Incisions were made into the gangrenous area and a culture was taken. The patient received 200 cc intravenously of antigas serum. A transfusion of 500 cc of citrated blood was given. Smear and culture were both positive for the gas bacillus. She succumbed to the infection the following day.

CASE 3—Mrs. R. S., aged 34, was admitted April 9 1935, complaining of pain in the right upper quadrant, which radiated to the right shoulder.

April 16 cholecystectomy was performed. She received daily clyses of 5 per cent dextrose and saline solution. On the third postoperative day the temperature rose to 103. Previous maximum postoperative temperatures were never above 100.

April 19 the patient was flushed and complained of a pain in the right pectoral region at the site of the hypodermoclysis. Wet dressings were to be applied. The abdomen was soft and there was no nausea or vomiting.

April 20 the patient's temperature was still high. In the right pectoral region there was a large red and swollen area of skin about 3 inches in diameter. Over the center of this inflammatory mass was a bleb about the size of a grape seed. Crepitation could be elicited. A culture and smear were taken from the bleb. The gas bacillus was identified in the smear examination.

The patient was immediately operated on. An incision was made parallel to the curve of the breast. The breast was raised up from the chest wall and the entire area packed with peroxide dressings. A small area of the pectoralis major was gangrenous and a foul odor emanated from the wound. Cultures of the excised necrotic tissue yielded the gas organism. The patient received gas antiserum. Thereafter the patient improved and was finally discharged May 7.

1256 Ocean Avenue

CURE OF DIABETES INSIPIDUS COINCIDENT WITH BILATERAL CORRECTION OF ABDOMINAL CRYPTORCHIDISM

BY GONADOTROPIC FACTOR FROM PREGNANCY URINE

ARTHUR A. ALLEN, M.D. AND JAMES S. STOKES, M.D.
PATERSON, N. J.

In presenting this case, no claim is made for originality of technic or medication. The medicament employed was the standard gonadotropic factor from pregnancy urine,¹ and the method of injection was routine.

However, the remarkable results obtained and the coincident relief of the symptoms of diabetes insipidus have led us to conjecture on the possibilities of our having stumbled on a new treatment for diabetes insipidus. The following is a summary of the case.

REPORT OF CASE

L. S., a boy, aged 11 years, was short of stature, somewhat mentally retarded and lacking in normal vigor and ambitions of a boy of his age and social opportunities.

He had a normal, full term birth, there was a nutritional problem in infancy, with a tendency toward obesity. Besides the usual childhood exanthemas, which were uncomplicated, he was given antitoxin in 1928 for diphtheria and the disease was aborted. The tonsils and adenoids were removed in 1929, followed by a subsequent resection of hypertrophied lymphoid tissue from the nasopharynx five years later. For the past three years he had shown evidences of retarded mental development and had suffered from polyuria, polydipsia, nocturia and enuresis. In his anxiety to avoid the embarrassment of enuresis, he voided sometimes as often as every half hour, and as much as 6 liters of urine in twenty-four hours.

On admission the temperature was 98 F., the pulse 85, respiration rate 20 and blood pressure 105 systolic, 85 diastolic. He was 51¼ inches (131 cm.) tall and weighed 80 pounds (36½ Kg.). The skin was clear and the mucous membranes were normal. The pupils were equal and reacted normally to light. The conjunctiva was normal in appearance. The ears, the nose and the buccal cavity were essentially normal. The throat, however, presented patches of hypertrophied lymphoid tissue. The lungs were clear and resonant throughout. The heart rate and rhythm were normal with no audible murmurs. Examination of the abdomen showed no tumor, tension or tenderness. Genito-urinary examination revealed that the foreskin was easily retractable. There was bilateral abdominal cryptorchidism and a suggestion of feminine distribution of pubic hair. The prostate gland could not be palpated. The blood count was normal. The Wassermann reaction was negative and urinalysis was essentially negative except for a low specific gravity (1.002) and excessive twenty-four hour output (from 6 to 8 liters).

From the physical examination and laboratory results we diagnosed the case as one of bilateral cryptorchidism with adiposis genitalis and diabetes insipidus.

The youth had been treated for two years by various physicians for these conditions and the treatment had been essentially solution of posterior pituitary and anterior pituitary products, with no apparent results. We therefore consulted with genito-urinary specialists on the procedure most desirable. One agreed with us that gonadotropic factor from the urine of pregnancy might stimulate the descent of the testes, another insisted that surgical intervention was necessary because the testes were definitely abdominal. Neither was enthusiastic about the possible success of a strictly medical procedure.

¹ Antuitrin S. Parke Davis & Co. was the gonadotropic substance used.

During a period of sixty days between Nov. 2, 1934, and Jan. 2, 1935, we gave the youth a series of twenty-five 1 cc subcutaneous injections of gonadotropic factor from pregnancy urine with the following results

December 3, following the fifteenth injection, both testes were palpable in the scrotum but receded into the lower end of the canals before the next injection was given. All symptoms of polyuria and polydipsia, enuresis and nocturia had disappeared, both testes were visible by transillumination in the scrotum and showed evidences of growth.

Jan. 2, 1935, when the twenty-fifth and last injection of this series was given, the child had undergone remarkable mental advance. His increased activities had reduced his weight about 7 pounds (3.2 Kg.), with the reduction most marked around the genitalia. The pubic hair was assuming a masculine distribution and the prostate was slightly palpable. The diabetes insipidus was apparently cured.

October 2, after nine months without any treatment, the patient was again examined, and no retrogressive signs had appeared. The boy's father remarked that the child was even "picking fights with boys who had usually bullied him before."

COMMENT

Practically all authorities agree that diabetes insipidus is associated with or results from disturbances in the hypophysis. Here is a case in which the usual treatment with pituitary substances neither caused the descent of the testes nor relieved the diabetes insipidus. Gonadotropic factor from pregnancy urine stimulated complete descent of the testes, cured the diabetes insipidus and improved the intelligence quotient of this child.

From our point of view, the remarkable results obtained by gonadotropic factor from pregnancy urine in causing the complete descent of the testes is overshadowed by the possibility that we may have stumbled on a cure for diabetes insipidus, as evidenced by comments on our results contained in a letter from Dr. Samuel Cohn of San Francisco, who states: "The relief of symptoms of diabetes insipidus is an interesting side issue in this case and may open up a new treatment for this disease."

It seems logical to conclude that the pregnancy hormone present in this substance stimulated the internal secretion of the testes as is very evident, and in this way may have exerted an indirect effect on the pituitary gland which was not possible by direct stimulation, and that the indirect stimulation of the pituitary gland with gonadotropic factor from pregnancy urine cured the diabetes insipidus.

365 Park Avenue

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

HOWARD A. CARTER, Secretary

BURDICK RADIANT HEAT LAMP ACCEPTABLE

Manufacturer: The Burdick Corporation, Milton, Wis.

This is a professional infra-red lamp recommended for use in physicians' offices and hospitals. It has a double wall reflector. The inner reflector is of porcelain enamel steel and has a Pyrex glass protection shield. The stand is counterbalanced and has a 30 inch vertical adjustment swivel cross arm with 25 inch extension and 10 inch adjustment, and a mobile base equipped with large rubber-tired casters. It is possible to interchange the 1,000 watt infra-red heating element with a nonmetallic surface heating element.

The firm submitted tests showing the radiant energy distribution of the lamp. At a distance of 30 inches from the screen at the bottom of the reflector the spread of the radiant energy was measured by a photronic cell and ammeter in a two foot circle. The distribution of energy was such that the readings were 15 per cent higher at the center than at the periphery of the circle. It would appear, therefore, that the radiant energy distribution was uniform and the reflector was designed to prevent hot spots.

This unit was tried out in a clinic acceptable to the Council and rendered satisfactory service.

In view of the aforementioned report, the Council voted to include the Burdick Radiant Heat Lamp in its list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT

PAUL NICHOLAS LEECH, Secretary

THE TRYPARSAMIDE PATENT AND TRADEMARK

Tryparsamide is an arsenical preparation originally proposed for treatment of trypanosomiasis but now used as well in certain cases of syphilis of the central nervous system. The product is at present manufactured and marketed by Merck and Co., Inc., and formerly by Powers-Weightman-Rosengarten Co., now merged with Merck and Co., Inc., under U. S. patents and trademark registration by license from the Rockefeller Institute for Medical Research, which owns both the patents and the trademark. It was accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies in 1925. Although from time to time the Council has recognized meritorious products marketed under monopolistic patents, it has never felt that such monopolies, especially when commercially controlled, were wholly in the best interests of medicine or of the general public.

The justification for patenting a worthwhile medical preparation lies in the opportunity this procedure affords of controlling the quality and purity of the preparation involved for the purpose of protecting the public from the marketing of specious or impure products. This is particularly true of a drug such as Tryparsamide, which, the Council is informed by the Rockefeller Institute, requires unusual care in its preparation to insure that degree of purity which is essential for proper use. The divorce of commercial control from the administration of a patent is in the interest of making the patent socially beneficial and serviceable. Such has been the case with the Tryparsamide patent which has been administered by the Rockefeller Institute. That body has derived no financial gain but has, through careful oversight of its licensee, been able to insure the marketing of a carefully manufactured, adequately standardized product.

In view of the fact that the patent expired Sept. 24, 1935, a large manufacturing firm inquired of the Secretary of the Council whether the Council would adopt a nonproprietary designation under which Tryparsamide could be marketed. This raised the question of the virtual perpetuation of monopolies by the use of trademark rights, which go on indefinitely after a patent has expired. This is a pernicious practice, since the establishment of a name through the seventeen years of the life of a patent makes it difficult to market a product under a new name.

On Oct. 9, 1935, the Secretary inquired of the Rockefeller Institute whether it intended to dedicate the name Tryparsamide to the public as a nonproprietary designation on the expiration of the patents. The institute informed the Secretary that it not only planned to dedicate the name to the public as a nonproprietary designation but had already taken steps to that end both in the United States and in numerous foreign countries. The Council therefore adopted Tryparsamide as a nonproprietary name for the product which has been marketed under that name as a proprietary designation.

In advising the Secretary of its decision, the Institute expressed the hope that the freedom to use this name which the institute was giving to the public would not result in ill advised competition among drug manufacturers undertaking to make Tryparsamide because it would be unfortunate if, as a result of such competition, production costs were lowered to the point at which the present high quality of the drug was jeopardized with dangerous consequences to the public.

In appreciation of the excellent way in which the Institute has administered the patent on Trypsamide and in recognition of its altruism in waiving trademark rights, the Council authorized publication of the foregoing statement

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH Secretary

MERTHIOLATE (See New and Nonofficial Remedies, 1935, p 313)

The following dosage form has been accepted

Saf T Top Tincture of Merthiolate 1 1000 Tincture of merthiolate 1 1000 marketed in Saf T Top containers (glass ampules having a capillary opening) containing 2 cc and 15 cc
Prepared by Robert A Bernhard Rochester N Y

PROCAINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1935, p 62)

The following dosage form has been accepted

Ampul Solution Procaine Hydrochloride with Epinephrine 1 cc Each cubic centimeter contains procaine hydrochloride U S P 0.02 Gm (½ grain) epinephrine hydrochloride 0.04 mg (1/1600 grain) and sodium bisulfite 0.45 mg (1/144 grain) in aqueous solution
Prepared by the U S Standard Products Co Woodworth Wis No U S patent or trademark

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

FRANKLIN C BING Secretary

CELLU BRAND MUSHROOMS WATER PACKED

Distributor—Chicago Dietetic Supply House, Inc, Chicago

Packer—Michigan Mushroom Company, Niles, Mich

Description—Canned whole mushrooms, packed in water

Manufacture—Mushrooms, grown from a culture of pure mushroom spawn, are picked at the proper stage of maturity, cleaned, spots cut out, washed, inspected, blanched and packed into cans. The cans are filled with water, sealed and processed.

Analysis (submitted by distributor) —

	per cent
Moisture	93.6
Total solids	6.4
Ash	0.6
Fat (ether extract)	0.2
Protein (N × 6.25)	1.9
Crude fiber	0.4
Starch (diastase method)	2.6
Carbohydrates other than crude fiber (by difference)	3.3

Calories—0.2 per gram 6 per ounce

Claims of Manufacturer—Choice quality whole mushrooms packed without added sugar or salt. For use in special diets in which sugar or salt is proscribed or in quantitative diets of calculated composition.

BORDEN'S MALTED MILK

Manufacturer—Borden's Milk Products Company, Inc, New York, subsidiary of the Borden Company, New York

Description—Malted milk prepared from whole milk, wheat, flour barley malt and sodium chloride

Manufacture—A mash of barley malt, wheat flour and water is maintained at a definite temperature until the starch has been completely converted and filtered. The filtrate is partially neutralized with sodium bicarbonate mixed with pasteurized milk, held for a period concentrated in vacuum pans and dried in finishing pans or on drum driers to 2 per cent mois-

ture content. The dried product is ground, salt is added, and it is packed.

Analysis (submitted by manufacturer) —

	per cent
Moisture	2.0
Ash	3.6
Fat	9.2
Protein (N × 6.25)	15.5
Crude fiber	0.1
Reducing sugar as maltose (including lactose and maltose)	50.0
Dextrins (alcoholic precipitation method)	19.6
Carbohydrates other than crude fiber (by difference)	69.6

Calories—4.2 per gram, 119 per ounce

Vitamins—Biologic assay shows approximately 180 U S P units of vitamin A, 70 Sherman-Chase units of vitamin B and 60 Sherman-Bourquin units of vitamin G per ounce.

Claims of Manufacturer—Excellent source of food energy, biologically efficient proteins and the minerals calcium and phosphorus, good source of vitamins A, B and G.

WILKINS TEA ORANGE PEKOE

Manufacturer—John H Wilkins Company, Washington, D C

Description—Blend of black fermented Orange Pekoe teas

Manufacture—Young tender tea leaves are hand picked withered for from ten to thirty hours to remove some of the moisture, rolled to break open the cells and distribute the juice over the surface of the leaves, fermented to develop aroma and color, spread on wire trays and dried in a current of hot air to check the fermentation. The dry tea is sorted in sifting machines into various grades and stored in aluminum lined chests. Teas of various varieties are carefully blended to produce a uniformly flavored product, and packed in glassine bags in cartons.

Analysis (submitted by manufacturer) —

	per cent
Moisture	7.4
Total ash	5.5
Water soluble ash	3.4
Acid insoluble ash	0.2
Alkalinity of water soluble ash	
31 cc N/10 acid per 100 grams tea	
Petroleum ether extract	0.7
Volatile oil	0.02
Protein (N × 6.25)	23.0
Crude fiber	21.6
Tannin	4.9
Caffeine	2.3
Water extract	41.2
Facing material	absent
Dust stems and foreign leaves	absent

1 HOME BRAND FLAVORED CRYSTAL WHITE SYRUP

2 FOLEY'S BRAND FLAVORED CRYSTAL WHITE SYRUP

Distributors—1 Griggs, Cooper & Company, St Paul
2 Foley Bros Grocery Company, St Paul Subsidiary of Griggs, Cooper & Company

Manufacturer—Griggs, Cooper & Company, St Paul

Description—Table syrups, corn syrup with invert sugar syrup flavored with vanillin and coumarin

Manufacture—Definite quantities of corn syrup invert sugar syrup water and flavor are mixed, heated, strained and automatically filled into cans.

Analysis (submitted by manufacturer) —

	per cent
Moisture	24.0
Total solids	76.0
Ash	0.3
Fat (ether extract)	0.0
Protein (N × 6.25)	0.1
Reducing sugars as dextrose	32.4
Sucrose	3.9
Dextrins (by difference)	36.3
Acidity as HCl	0.02
Sulfur dioxide	none
pH	5.2

No methods are available for accurately determining the composition of syrups of this nature, therefore the foregoing analysis is roughly approximate.

Calories—3 per gram 85 per ounce

Claims of Manufacturer—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking, baking and the table.

HOSPITAL SERVICE IN THE UNITED STATES

FIFTEENTH ANNUAL PRESENTATION OF HOSPITAL DATA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Outstanding facts shown by the Annual Census of Hospitals for 1935 are fewer hospitals, increased capacity and increased occupancy. The period covered by the census corresponds nearly with the calendar year 1935. Answers were received from 96 per cent of the hospitals, representing about 99 per cent of the total bed capacity. The total number of registered hospitals is 6,246 as compared with 6,334 last year, a net loss of eighty-eight.

The capacity of all registered hospitals is 1,076,350 beds and 53,310 bassinets, a gain for the year of 28,249 beds and 284 bassinets.

General hospitals gained 12,749 beds and 901 bassinets.

fifteen, according to the estimated census, was a hospital bed patient in 1935.

Growth of hospital facilities for the last twenty-six years has been at the rate of 25,203 beds a year. This is the equivalent of sixty-nine beds for every day in the twenty-six years.

There are 4,364 hospitals that have their own laboratories, 3,115 of which are directed by physicians, while 275 admitted having nurses for directors.

Roentgen-ray departments were reported by 4,698 hospitals, with 3,686 physician-directors and 278 nurse-directors.

Hospitals reporting patients' libraries numbered 2,749.

1935	Hospitals	Beds	Bassinets	Patients Admitted	Average Census
Nonprofit	2,640	268,568	36,152	4,477,515	167,680
Profit (unrestricted)	1,882	64,859	8,741	946,587	32,909
Governmental	1,724	742,923	8,417	2,285,840	676,100
Totals	6,246	1,076,350	53,310	7,709,942	876,689

Nonprofit organizations have 2,640, or about two fifths of the entire number of hospitals. Governmental agencies maintain 742,923 beds, or more than twice as many as the nonprofit and for profit organizations combined. On the other hand, nonprofit organizations admitted 4,477,515 patients, or almost twice as many as all governmental agencies, even though the latter include county and city hospitals. Nongovernmental hospitals have 44,893 bassinets out of a total of 53,310 in all hospitals. Governmental hospitals have an average census of 676,100, or about three times that of the combined nongovernmental organizations. The figures prove the necessity of government responsibility for indigent, custodial and chronic care, and non-government or voluntary care for that large number whose disabilities are acute, the stay comparatively short, and most of whom have available financial resources. The reader will not overlook the contrast between the figures for the nonprofit and those for the for profit organizations.

The average number of idle beds was 199,661, of which 144,880 were in general hospitals.

The total patients admitted not counting the new-born infants, was 7,709,942, a gain of 562,526 over last year.

The average daily census of patients of all registered hospitals was 876,689, a gain of 46,591.

The increase in capacity during 1935 is equivalent to a complete seventy-seven bed hospital for every day in the year including Sundays and holidays. This is in addition to replacements.

Hospitals are admitting bed patients at the rate of one patient every four seconds throughout the year.

The 4,257 general hospitals admitted 6,867,870 patients or 89.07 per cent of the 7,709,942 patients admitted to all hospitals. However the total patient days in general hospitals was only 95,372,310, or 29.8 per cent of 319,991,485 patient days in all hospitals.

The average length of stay per patient in general hospitals was fourteen days.

The 769,660 babies born in hospitals in 1935 means an increase of 68,517 over 1934. General hospitals reported 732,465 births and maternity hospitals 35,784.

Using the population estimated for 1935 by the United States Bureau of the Census, one person in

Seven hundred and seventeen hospitals have their own ambulances, and 533 of these reported a total of 802,930 ambulance calls.

The 2,476 hospitals said to have outpatient departments reported 9,712,862 outpatients, who made 35,588,640 visits to the outpatient departments.

In the foregoing paragraphs and throughout this article the figures for "patients admitted" and "average daily census of patients" are exclusive of new-born infants and do not include outpatients.

Reference to outpatient departments, ambulances, schools of nursing and so on are not to be understood as requirements or even as arguments for the maintaining of such facilities by all hospitals. Hospital facilities should be provided in accordance with the needs of any given institution for the best and expeditious care of its patients.

Some idea of the immense proportions of hospital enterprises in all states may be easily obtained by looking at the grand totals of the number of hospitals, their capacity and the number of patients accommodated.

In New York State alone there are 588 registered hospitals under several kinds of control and all types of service with a grand total capacity of 166,843 beds.

and 7,625 bassinets. The number of persons in that state who made use of hospital beds during the year was 1,123,533. The average census of the citizens of the state in all those registered hospitals was 141,277.

The nearest second to New York is Pennsylvania, with its total of 360 registered hospitals and a bed capacity of 80,969 and 4,385 bassinets. There were 595,904 patients admitted and the average census was 66,223.

The volume of hospital service in Illinois is third, with 321 hospitals, 75,949 beds, 4,050 bassinets, 543,141 patients admitted and an average census of 60,553. California exhibits 368 registered hospitals, 64,315 beds and 3,062 bassinets, a total of 487,433 admissions and an average census of 53,895.

The column that yielded these figures shows five additional states in each of which more than 250,000 were admitted to hospitals for bed care during the year. These are Massachusetts, 351,791; Ohio, 351,785; Michigan, 306,960; New Jersey, 269,057; and Texas, 270,427.

Other states in which more than 100,000 patients were admitted during the year are Connecticut, Georgia, Indiana, Iowa, Kansas, Louisiana, Maryland, Minnesota, Missouri, North Carolina, Tennessee, Virginia, Washington, West Virginia and Wisconsin.

New-born infants are not counted in the figures here given either for the patients admitted or for the average census.

IDLE BEDS

An accompanying map shows at a glance the percentage of occupancy prevailing in general hospitals for each state. The different sections of the United

beds in hospitals grouped according to type of service. The average number of idle beds for the year 1935 is 199,661, as compared with 216,775 in 1933 and 180,367 in 1929. The idle beds in general hospitals numbered 144,880. All governmental hospitals, federal, state and

Percentages of Beds Occupied

	1929	1931	1933	1935
According to Ownership or Control				
Federal	76.8	76.5	75.0	77.1
State	91.6	94.2	91.1	90.4
County	80.7	81.2	80.8	81.7
City	74.3	76.3	83.0	87.8
City county	80.2	82.0	79.9	79.1
Total governmental	85.9	88.7	90.1	91.1
Church	66.7	63.2	54.9	61.4
Fraternal	68.7	69.0	61.5	67.5
Associations and restricted corporations				63.0
Industrial	54.4	48.2	44.4	
Independent associations	65.9	61.3	58.5	
Total nonprofit				67.0
Individual and partnership	44.2	48.7	41.1	47.4
Corporations (unrestricted as to profit)				50.5
Total proprietary				48.4
Total nongovernmental	64.6	61.9	55.3	60.1
According to Type of Service				
General	65.5	64.4	59.9	64.3
Nervous and mental	95.7	94.6	93.1	90.8
Tuberculosis	81.7	83.0	85.3	83.4
Maternity	62.8	58.6	60.8	58.3
Industrial	54.6	48.1	44.2	46.0
Eye, ear, nose and throat	47.7	52.0	43.6	41.1
Children's	65.9	69.9	65.9	63.9
Orthopedic	69.2	78.1	76.0	78.3
Isolation	36.1	38.6	41.2	44.7
Convalescent and rest	70.9	72.3	69.2	71.1
Hospital departments of institutions	63.0	63.9	60.1	66.6
All other hospitals	74.6	69.2	79.3	86.9
Total all hospitals	80.1	79.6	78.8	81.4

local had an average of 66,823 idle beds. The non-profit associations, such as churches, fraternal organizations and independent associations, maintain 100,888 idle beds.

A separate table shows percentage of beds occupied in the different groups of hospitals, showing trends over the past six years. General hospitals had an occupancy of 64.3 per cent in 1935 as against 59.9 per cent in 1933. Nervous and mental hospitals show an occupancy of 95.8 per cent as compared with 95.1 per cent in 1933. Overcrowding is a chronic situation in the majority of state mental hospitals. Tuberculosis hospitals as a group show an occupancy rate of 85.4 per cent, maternity hospitals, 58.3 per cent, industrial, 46 per cent, eye, ear, nose and throat hospitals, 48.1 per cent, children's hospitals, 63.9 per cent, and orthopedic hospitals, 78.3 per cent.

GOVERNMENTAL HOSPITALS

Practically every unit of government has found it necessary or expedient to engage in the hospitalization of the sick and injured. Different departments of the federal government maintain hospitals for the Army, the Navy, the Public Health Service, Veterans, Indians and a few others.

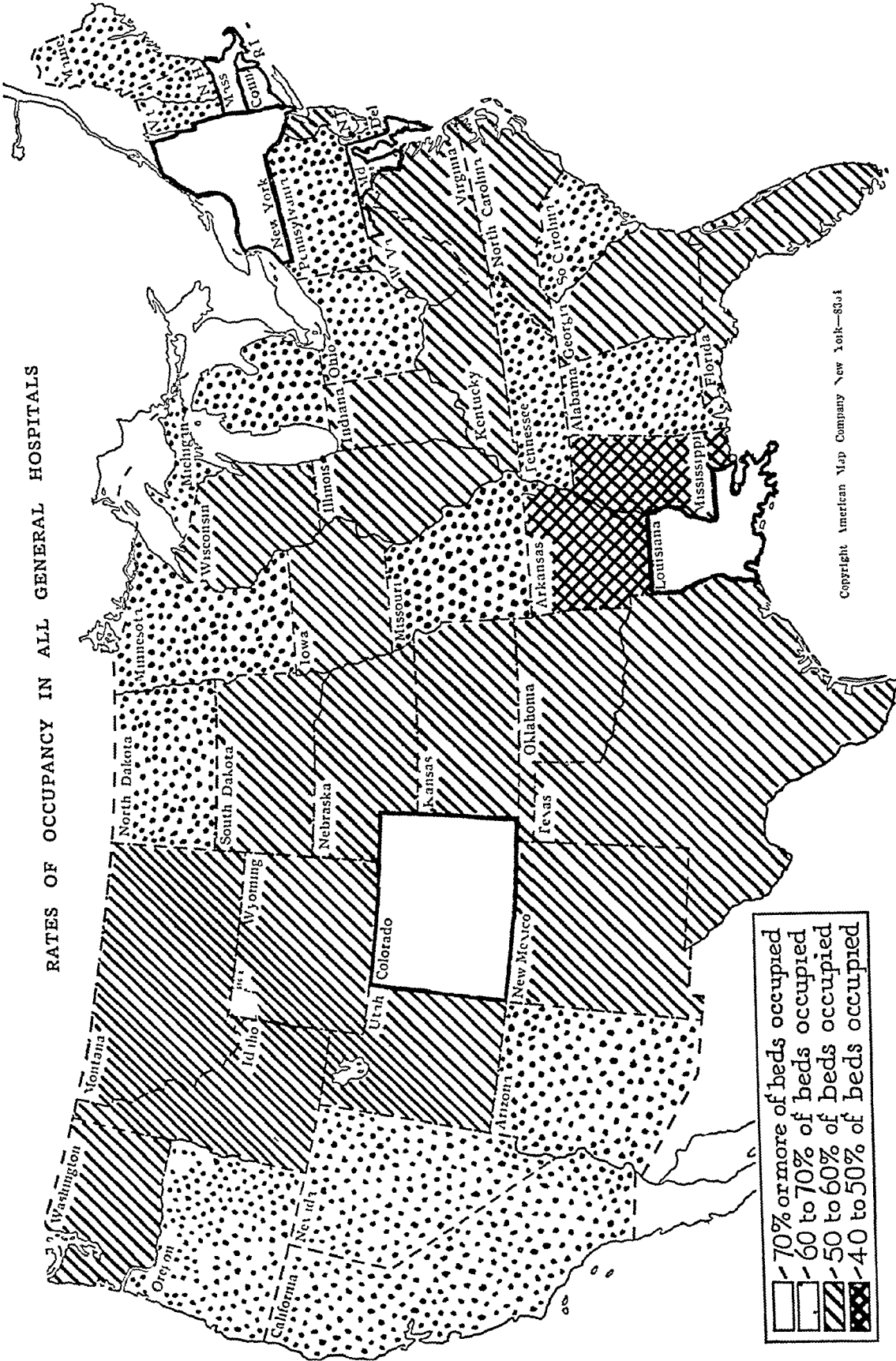
State governments have assumed the duty of providing hospitalization for indigent patients suffering from mental diseases and from tuberculosis. This has given rise to a large system of state mental hospitals. In Wisconsin, custodial care of the insane is provided by counties. Only facilities for study and diagnosis are maintained by the state. The states assume the care of those suffering from tuberculosis and mental diseases because these ailments produce a period of disability longer than the finances of the average citizen will carry him.

Unoccupied Beds in Hospitals

	1929	1933	1935
According to Ownership or Control			
Federal	13,868	18,909	18,358
State	21,664	24,119	21,956
County	12,625	11,363	11,624
City	14,698	11,774	17,571
City county	2,507	2,234	2,114
Total governmental	65,362	68,499	66,823
Church	3,785	52,219	43,646
Fraternal	1,656	1,912	1,740
Associations and restricted corporations			55,472
Industrial	3,107	3,301	
Independent associations	54,794	71,305	
Total nonprofit			100,888
Individuals and partnership	17,313	19,639	15,701
Corporations (unrestricted as to profit)			16,249
Total proprietary			31,950
Total nongovernmental	114,715	145,876	132,538
According to Type of Service			
General	123,025	155,021	144,880
Nervous and mental	18,919	24,163	22,014
Tuberculosis	10,603	10,481	9,635
Maternity	2,022	3,119	2,559
Industrial	3,180	3,705	1,845
Eye, ear, nose and throat	1,325	1,427	1,174
Children's	1,597	1,865	1,759
Orthopedic	1,175	1,497	1,354
Isolation	4,745	3,958	4,083
Convalescent and rest	1,856	1,687	1,706
Hospital department of institutions	9,148	8,531	6,934
All other hospitals	2,564	1,725	1,535
Total unoccupied beds—all hospitals	180,367	216,775	199,661

States vary greatly in the extent to which the people make use of hospitals. Worthy of special study is the table that tells the number of unoccupied beds. It shows trends by comparing figures for 1929, 1933 and 1935. The first section of the table reports for all registered hospitals grouped according to ownership or control and the second section shows the empty

RATES OF OCCUPANCY IN ALL GENERAL HOSPITALS



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Occupancy in General Hospitals

The percentages of beds occupied in general hospitals during the year 1935, by states, were as follows

Alabama	59.9	District of Columbia	69.8	Kansas	57.1	Minnesota	63.1	New Jersey	70.0	Oregon	60.6	Utah	54.7
Arizona	68.6	Florida	66.2	Kentucky	54.1	Mississippi	40.6	New Mexico	53.7	Pennsylvania	62.2	Vermont	60.6
Arkansas	49.4	Georgia	63.1	Louisiana	83.6	Alabama	64.7	New York	63.3	Rhode Island	60.6	Virginia	58.1
California	68.1	Idaho	54.7	Maine	64.3	Nebraska	58.0	North Carolina	58.3	South Carolina	60.2	West Virginia	54.5
Colorado	58.9	Illinois	57.0	Maryland	77.7	Nevada	56.1	North Dakota	64.6	South Dakota	63.2	Wisconsin	53.9
Connecticut	60.3	Indiana	56.0	Massachusetts	70.8	New Hampshire	69.3	Ohio	63.3	Tennessee	63.6	Wyoming	51.2
Delaware	60.1	Iowa	56.4	Michigan	67.5	New Jersey	69.2	Oklahoma	50.0	Texas	53.7		

For the general care of the indigent and with special relation to injuries and to diseases other than mental and tuberculosis, hospitalization has been assumed by county and city governments or by the two combined. Medical services in these hospitals are usually rendered by physicians dwelling within the confines of the county or the city.

Regarding growth of governmental hospitalization, in 1923 there were 1,736 of all types of government institutions including federal, state and local, and they had an aggregate capacity of 471,948 beds, in 1927 our census showed 1,809 with a bed capacity of 545,169, in 1935 we found 1,724 governmental hospitals with a capacity of 742,923, admitting 2,285,840 patients and having a constant patient population of 676,100. A very fruitful source of facts on this growth is contained in table 1, section A. The federal hospitals now number 316, with a capacity of 83,353 beds and 604 bassinets. The number of patients admitted reached the unprecedented total of 382,980 and the average census was 64,795. Looming still larger is the work of the state hospitals, which number 526 but have a total capacity of 485,205 beds and 1,186 bassinets. They admitted 506,133 patients and had a constant census of 463,249. The apparent decline in the number of state hospitals from 592 in 1927 to 526 in 1935

Summary of Growth of Hospitals 1909 to 1935

Year	Federal Hospitals		State Hospitals		All Other Hospitals		Total	
	Num ber	Capac ity	Num ber	Capac ity	Num ber	Capac ity	Num ber	Capac ity
1909	71	8 827	232	189 049	4 036	223 189	4 309	421 065
1914	93	12 602	294	232 834	4 600	287 045	5 037	539 481
1918	110	18 815	303	262 204	4 910	331 182	5 323	612 201
1923	220	53 869	601	302 208	6 009	309 645	6 830	700 722
1925	294	61 765	593	369 709	5 963	461 410	6 852	892 934
1931	291	69 170	576	419 282	5 746	450 663	6 613	974 115
1932	301	74 151	568	442 601	5 693	497 602	6 562	1 014 354
1933	295	75 635	567	459 646	5 583	491 765	6 437	1 027 046
1934	313	77 865	544	473 033	5 477	497 201	6 334	1 048 101
1935	316	83 353	526	485 205	5 404	507 792	6 246	1 076 350

is explained mainly by the discontinuance of hospital departments of various state custodial institutions, which found it more economical and effective to hospitalize their sick inmates in existing general hospitals of the community. The average size of governmental hospitals, both state and local, has increased tremendously in recent years. County hospitals now number 490 and they have 90,904 beds and 2,375 bassinets, admitted 476,275 patients in 1935 and had an average census of 79,280 patients. The number of patients admitted increased 22,850 over last year.

City hospitals remain about constant in number, there now being 328, the same as last year. They show a slow growth, now having 73,322 beds and 3,742 bassinets.

Hospitals operated by city and county governments jointly declined in number and in patient population, owing in part to the dropping out of one or the other member of the dual ownership, causing a reclassification either as a county hospital or as a city hospital.

NONPROFIT ORGANIZATIONS

There are 2,640 hospitals that are run by non-governmental, nonprofit organizations. They include churches, fraternal orders, and nonprofit corporations and associations organized for the express purpose of conducting a hospital.

The total capacity of the 2,640 nonprofit hospitals is 268,568 beds and 36,152 bassinets. Most of the hospitals in this group care for the acutely sick and injured

persons, including most types of ailment with the exception of contagious diseases, nervous and mental and tuberculosis. The rapid turnover and the large number of persons served are attested by the fact that 4,477,515 patients were admitted during the year 1935. This was an increase of 313,780 over the previous year.

CHURCH HOSPITALS

Among the nonprofit organizations, churches figure prominently. There are 970 church hospitals with a total capacity of 113,268 beds and 16,033 bassinets. The patients admitted numbered 1,950,308 in 1935 as compared with 2,013,352 in 1931. Although the number of patients admitted by church hospitals decreased in the five year period, the last year shows a substantial increase. The majority of patients in church hospitals are pay patients, and it is to be expected that their patronage will fluctuate with business conditions.

The state holding the banner for number of church hospitals is Illinois with eighty-six, followed by New York with seventy-eight, Wisconsin with fifty-nine, Ohio with forty-eight, and Iowa and Pennsylvania with forty-two each.

FRATERNAL HOSPITALS

Fraternal hospitals have decreased since 1927 from eighty-five to sixty-nine. At the same time the number of beds has increased from 4,935 to 5,360. The number of patients admitted in fraternal hospitals is on the decrease, but the average census is increasing.

NONPROFIT CORPORATIONS AND ASSOCIATIONS

Nonprofit corporations and associations are organizations other than churches and fraternal orders each of which was brought into being for the sole purpose of operating a hospital at a given place. Usually the hospital is controlled by a board of trustees elected by the members of the hospital association, membership in the association being determined on the basis of donations or contributions. Such organizations are operating 1,601 hospitals, which have a capacity of 149,940 beds and 18,978 bassinets. They admitted 2,493,281 patients in 1935; their average census was 94,468. Figures are available for comparison only with the previous year, and in that time they show increases in occupancy figures.

The state in which these are most numerous is New York with 212, followed by Pennsylvania with 189, Massachusetts with 103, Illinois with eighty-three, and Ohio with seventy-five.

PROPRIETARY ORGANIZATIONS

The classification of proprietary organizations embraces those hospitals usually spoken of as being operated "for profit." They may be divided into two groups, those operated by individuals and partnerships and those run by corporations that are unrestricted as to profit; they may or may not make a profit, but their form of organization does not keep them from it.

INDIVIDUAL AND PARTNERSHIP

The individual and partnership hospitals number 1,255. They have a capacity of 29,913 beds and 4,384 bassinets. They admitted 413,997 patients during the year and their average census was 14,212. There seems to be a pronounced downward trend here, since these hospitals numbered 1,682 in 1927 with a capacity of 39,118 beds. Nevertheless, this type of control and ownership is especially useful in communities where hospitals on a plan of broader cooperation cannot be obtained.

Table 1—HOSPITAL FACILITIES BY STATES AND BY CONTROL A GOVERNMENT HOSPITALS

Municipal No	Federal					State					County					City					City and County					Total Governmental																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	Hospitals	Beds	Patients Admitted	Average	Mortality	Hospitals	Beds	Patients Admitted	Average	Mortality	Hospitals	Beds	Patients Admitted	Average	Mortality	Hospitals	Beds	Patients Admitted	Average	Mortality	Hospitals	Beds	Patients Admitted	Average	Mortality	Hospitals	Beds	Patients Admitted	Average	Mortality																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
1 Alabama	17	1,739	7,739	1.00	1.00	3	5,040	3,062	4.74	13.1	4	69	40,447	4.74	13.1	2	12	8	1,106	59	21	8,674	50	33,779	7,706	1	124	747	973	8.147	279,810	670,100																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
2 Arizona	1	1,131	1,131	1.00	1.00	0	0	0	0	0	7	317	30	4,004	2.20	6	1	1	3	240	7	16	6,670	29	14,711	6,112	2	1,749	717	888	3,470	641,000	51																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
3 Arkansas	1	1,131	1,131	1.00	1.00	0	0	0	0	0	4	200	28	3,674	8.2	4	3	21	4	1,746	1	10	47,578	669	215,082	44,411	52	1,746	694	473	7,815	2,155,578	696,044																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
4 California	1	1,131	1,131	1.00	1.00	0	0	0	0	0	61	17,359	149	81,141	8.14	1	3	21	4	1,746	1	10	47,578	669	215,082	44,411	53	1,804	679	367	7,860	9,049,511	610,168																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
5 Colorado	6	6,611	31,872	1.817	1.817	10	21,326	11,202	2.794	2.794	3	4	19	1,000	1.00	1	2	641	20	16,334	441	19	7,002	82	13,669	7,942	54	1,816	641	524	7,262	1,831,078	591,511																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
6 Connecticut	6	6,611	31,872	1.817	1.817	10	21,326	11,202	2.794	2.794	3	4	19	1,000	1.00	1	2	641	20	16,334	441	19	7,002	82	13,669	7,942	55	1,816	641	524	7,262	1,831,078	591,511																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
7 Delaware	1	1,131	1,131	1.00	1.00	1	1,131	1,131	1.00	1.00	3	194	18	7,000	3.61	5	5	861	28	7,110	6.0	21	10,811	98	15,867	10,039	56	1,816	641	524	7,262	1,831,078	591,511																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
8 District of Columbia	1	1,131	1,131	1.00	1.00	1	1,131	1,131	1.00	1.00	3	194	18	7,000	3.61	5	5	861	28	7,110	6.0	21	10,811	98	15,867	10,039	57	1,816	641	524	7,262	1,831,078	591,511																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
9 Florida	8	8,000	7,877	1.00	1.00	2	3,433	4,428	1.771	1.771	8	51	4	8,094	414	6	2	148	86	17,009	1,689	14	10,718	157	29,219	9,270	58	1,816	641	524	7,262	1,831,078	591,511																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
10 Georgia	8	8,000	7,877	1.00	1.00	2	3,433	4,428	1.771	1.771	8	51	4	8,094	414	6	2	148	86	17,009	1,689	14	10,718	157	29,219	9,270	59	1,816	641	524	7,262	1,831,078	591,511																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
11 Idaho	3	3,333	3,333	1.00	1.00	1	1,131	1,131	1.00	1.00	3	194	18	7,000	3.61	5	5	861	28	7,110	6.0	21	10,811	98	15,867	10,039	60	1,816	641	524	7,262	1,831,078	591,511																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
12 Illinois	10	10,000	10,000	1.00	1.00	24	24,000	24,000	1.00	1.00	23	8,061	191	83,107	7.68	20	2	2	117	18,631	1,995	78	2,046	378	1,777	263	61	1,816	641	524	7,262	1,831,078	591,511																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
13 Indiana	1	1,131	1,131	1.00	1.00	3	3,333	3,333	1.00	1.00	3	3,333	3,333	1.00	1.00	11	7	4	6,643	519	49	39	13,678	149	37,499	19,413	62	1,816	641	524	7,262	1,831,078	591,511																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
14 Iowa	1	1,131	1,131	1.00	1.00	11	11,111	11,111	1.00	1.00	11	7	4	6,643	519	49	39	13,678	149	37,499	19,413	39	13,678	149	37,499	19,413	63	1,816	641	524	7,262	1,831,078	591,511																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
15 Kansas	7	7,777	7,777	1.00	1.00	16	16,666	16,666	1.00	1.00	5	26	36	4,034	162	7	7	7	191	42	2,971	47	1	60	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1</

The list beginning on page 798 was subject to additions and removals of hospitals until going to press totals of the list therefore may vary slightly from tables and 2 which were prepared as of Dec 31, 1955

Conspicuous for the number of individually owned and partnership hospitals are California and Texas, each with 106, New York with seventy-five, Minnesota with seventy-two, Nebraska with forty-nine and Oklahoma with forty-seven

CORPORATIONS (UNRESTRICTED AS TO PROFIT)

Corporations unrestricted as to profit are frequently called "stock" hospitals. Figures on them as a segregated classification have been obtained only for two

TOTALS FOR NONGOVERNMENTAL HOSPITALS

The summary of tables 1 B and 1 C indicates that nongovernmental hospitals show a decline in number but show an increase in capacity and in the number of persons served. The total nongovernmental hospitals is 4,522, with a capacity of 333,427 beds and 44,893 bassinets. They admitted 5,424,102 patients last year as contrasted with 2,285,840 patients, the number admitted by all governmental hospitals.

Table 1—HOSPITAL FACILITIES BY STATES AND BY CONTROL
B NONPROFIT ORGANIZATIONS

Marginal No	Church					Fraternal					Nonprofit Corporations and Associations					Total Nonprofit					Marginal No
	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1 Alabama	7	663	84	15 874	352	1	29		212	12	18	1 262	113	22 386	587	26	1 954	197	38 422	911	1
2 Arizona	9	739	84	13 343	413	1	26		10	14	7	290	13	1 788	143	17	1 055	97	15 161	620	2
3 Arkansas	9	916	83	16 090	467	3	125	6	1 154	74	7	576	43	5 834	166	21	1 677	132	23 048	601	3
4 California	40	4 598	823	90 079	2 560	5	675	23	7 289	462	61	5 017	539	77 692	3 213	106	10 293	1 441	175 060	6 915	4
5 Colorado	28	2 569	273	37 311	2 490	2	266		183	115	19	1 825	72	9 728	1 293	49	4 660	345	41 222	3 907	5
6 Connecticut	4	908	166	19 729	644						36	5 120	736	87 307	3 764	40	6 178	907	107 036	4 408	6
7 Delaware	1	71	12	1 646	48						5	502	80	11 298	363	6	577	92	12 944	411	7
8 Dist Columbia	4	736	117	20 100	535						10	1 605	230	29 793	1 068	14	2 341	347	49 593	1 603	8
9 Florida	7	706	107	9 869	289	3	145	7	1 908	103	23	1 004	146	15 302	471	33	1 855	260	26 349	863	9
10 Georgia	5	464	58	11 177	285	1	60		207	46	18	1 120	109	19 167	488	24	1 644	167	30 611	819	10
11 Idaho	11	642	110	13 415	374						2	39	7	344	17	13	681	117	13 759	391	11
12 Illinois	86	11 531	1 766	191 011	6 405	5	432	25	1 546	267	83	8 647	1 397	145 176	4 491	174	20 610	3 183	346 733	11 163	12
13 Indiana	28	3 734	605	68 388	1 951	1	100		85	75	19	1 250	206	20 499	663	48	5 064	811	88 919	2 689	13
14 Iowa	42	4 620	591	67 121	2 185	1	50		17	42	25	1 033	175	16 307	496	68	5 103	766	84 045	2 231	14
15 Kansas	36	2 943	429	49 744	1 628	1	250		13	71	21	601	119	11 144	418	58	3 994	547	65 240	2 111	15
16 Kentucky	14	1 652	206	29 363	1 013	2	40		89	128	26	1 292	152	19 369	630	42	2 934	358	48 896	1 916	16
17 Louisiana	9	1 279	124	27 742	780	2	122	13	1 104	51	15	1 128	86	19 170	641	26	2 329	323	45 016	1 506	17
18 Maine	5	353	41	6 077	212						21	1 400	202	23 989	927	26	1 753	243	30 066	1 149	18
19 Maryland	9	1 943	171	25 597	1 567						23	3 547	334	48 820	2 651	37	5 490	505	74 417	4 918	19
20 Massachusetts	18	2 437	395	41 144	1 680	1	60		400	73	103	10 146	1 758	173 421	6 349	122	12 643	2 153	214 965	8 501	20
21 Michigan	33	3 726	605	68 388	2 477	3	390	10	903	297	55	6 133	788	97 673	3 421	91	10 240	1 453	167 201	6 195	21
22 Minnesota	35	3 476	506	64 904	2 066	1	60		212	58	38	2 168	365	40 445	1 219	74	5 704	871	105 561	3 343	22
23 Mississippi	2	154	18	4 359	75	1	12		50	5	18	843	89	11 691	253	21	1 009	107	16 130	333	23
24 Missouri	39	5 709	692	88 029	3 486	4	338		2 054	262	23	2 308	285	31 715	1 240	66	8 355	977	121 798	4 988	24
25 Montana	22	1 643	277	29 410	967						7	283	47	4 551	147	29	1 926	324	34 961	1 114	25
26 Nebraska	27	2 487	317	41 422	1 313						5	131	28	2 891	69	32	2 618	345	44 313	1 447	26
27 Nevada	1	52	12	1 505	46						3	120	10	1 293	49	4	112	22	2 793	89	27
28 New Hampshire	5	319	64	7 985	249						23	1 115	213	20 736	640	28	1 454	277	28 721	889	28
29 New Jersey	18	3 149	483	57 415	2 229	2	150		431	62	67	8 719	1 255	143 720	5 890	87	12 018	1 738	201 566	8 181	29
30 New Mexico	14	980	79	19 935	469						10	385	32	2 808	135	24	1 365	111	15 764	604	30
31 New York	78	11 596	1 516	110 229	8 020	3	341		655	211	212	28 436	3 561	496 643	19 807	293	40 373	5 077	667 227	26 831	31
32 North Carolina	17	1 016	153	19 269	663	1	20		10	15	67	3 022	453	77 541	2 184	85	4 738	606	96 890	2 658	32
33 North Dakota	20	1 533	226	34 512	1 060						9	341	100	6 759	165	29	1 894	326	41 811	1 253	33
34 Ohio	48	7 136	1 004	121 000	4 443	4	448		2 303	305	75	6 918	1 073	120 019	3 971	127	14 502	2 077	249 372	8 003	34
35 Oklahoma	9	900	162	16 040	477	3	130	14	1 717	39	7	227	31	3 757	92	19	1 257	207	21 544	608	35
36 Oregon	15	1 647	229	36 630	1 017	1	50		298	51	12	514	80	6 402	272	28	2 211	309	43 536	1 240	36
37 Pennsylvania	42	6 807	835	92 724	3 120	5	380		1 351	337	189	24 199	3 053	38 225	16 691	236	31 396	3 868	481 311	21 143	37
38 Rhode Island	2	110	41	5 630	180						12	1 738	283	25 501	1 203	14	1 848	283	25 044	1 295	38
39 South Carolina	6	302	41	5 630	180	3	144	7	1 218	104	23	1 417	146	29 929	862	32	1 923	194	26 106	1 146	39
40 South Dakota	15	1 011	150	18 915	564						10	374	77	6 039	163	25	1 355	217	24 654	724	40
41 Tennessee	6	1 023	133	28 247	686						26	1 646	133	21 037	882	31	2 679	266	49 284	1 568	41
42 Texas	40	3 915	486	80 466	2 129	4	305	20	2 325	188	26	1 464	130	20 669	697	70	5 744	626	112 160	3 014	42
43 Utah	6	989	166	15 464	509	1	20		74	20	4	160	40	8 833	50	11	1 469	206	19 311	609	43
44 Vermont	3	214	20	4 200	130						16	1 857	112	12 777	1 088	19	1 604	182	16 077	1 918	44
45 Virginia	4	487	63	10 363	265	2	147	10	2 233	60	41	2 623	269	51 509	1 476	47	3 257	342	63 061	1 801	45
46 Washington	21	2 531	406	43 852	1 217	1	20		107	20	22	1 714	312	32 002	1 007	44	4 285	718	75 461	2 504	46
47 West Virginia	9	925	105	15 491	469						15	851	78	16 370	491	24	1 716	183	31 861	900	47
48 Wisconsin	59	6 210	951	100 641	3 546	1	25		39	20	33	2 125	371	39 347	1 157	93	8 422	1 322	140 222	4 773	48
49 Wyoming	2	45	10	922	17						3	125	17	1 964	54	7	170	27	2 858	11	49
50 Totals (1935)	970	113 268	16 037	1 910 908	69 902	60	5 360	141	33 926	3 620	1 601	149 940	18 978	2 497 281	94 468	2 640	268 785	36 132	4 477 715	167 680	50
51 (1934)	910	113 263	16 067	1 786 522	63 551	72	5 411	150	34 700	3 601	1 604	149 035	18 074	2 342 512	89 615	2 646	267 712	36 251	4 163 135	157 067	51
52 (1933)	854	115 840	16 180	1 753 636	63 621	74	5 510	132	36 817	3 497											
53 (1932)	1 001	117 555	16 125	1 918 214	70 119	76	5 528	161	44 780	3 820											
54 (1931)	1 011	116 935	15 861	2 013 352	73 911	77	5 606	149		3 779											
55 (1930)	1 017	116 846	15 615		75 162	70	5 283	158		3 627											
56 (1929)	1 024	113 555	15 054		75 710	87	5 298	195													
57 (1928)	1 056	114 613	13 190																		
58 (1927)	1 060	108 582			72 813	85	4 955			3 193											

The list beginning on page 798 was subject to additions and removals of hospitals until going to press. Totals of the list therefore may vary slightly from tables 1 and 2 which were prepared as of Dec 31 1935.

years. Their number is 627, with a capacity of 34 946 beds and 4,357 bassinets. Patients admitted in 1935 numbered 532 590 and the average census was 18 697. An increase in the amount of work during the past year is noticeable, considering that they receive almost wholly pay patients.

The total number of hospitals understood to be operating for profit or with a possibility of profit, therefore, numbers 1 882. They have 64,859 beds and 8 741 bassinets. They admitted 946 587 patients and their average census was 32,909.

HOSPITALS ACCORDING TO TYPE OF SERVICE

GENERAL HOSPITALS

The trend as to the number of general hospitals has been downward for the past eight years. The census of 1935 gives a total of 4,257 general hospitals, as compared with 4 361 in 1928. Comparison of capacity of general hospitals for the two years mentioned tells quite a different story. In 1928 there were 363,337 beds in general hospitals as compared with 406 174, an

increase of 42,837 beds. In the same period, bassinets in general hospitals increased from 38,339 to 48,757. The total number of patients admitted in general hospitals in 1931, the first year for which this figure is available, was 6,321,861, in 1935 the general hospitals admitted 6,867,870. In 1927 the average census of patients in general hospitals was 228,084, in 1935 it was 261,294.

The rate of increase in capacity and increase in patient population in the general hospitals has been

showed that 418 of the general hospitals have tuberculosis departments, aggregating 14,468 beds. These departments admitted 37,124 patients in the year 1934. An unknown number of general hospitals also take care of contagious diseases and mental cases.

The training of interns in their fifth year in medicine is limited almost entirely to general hospitals, 708 of which provide a total of 6,500 approved internships. Of the 405 hospitals approved for residencies in specialties, 193 of these are general hospitals providing

Table 1—HOSPITAL FACILITIES BY STATES AND BY CONTROL
C PROPRIETARY

Marginal No	Individual and Partnership					Corporations (Unrestricted as to Profit)					Total Proprietary					TOTAL NONGOVERNMENTAL					Marginal No
	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	
1 Alabama	23	685	102	12,481	356	11	567	77	11,373	234	39	1,452	179	23,854	590	65	3,406	376	69,326	1,541	1
2 Arizona	10	238	13	798	97	5	125	18	1,435	40	15	363	31	2,166	137	32	1,418	123	17,327	767	2
3 Arkansas	23	443	51	7,327	164	5	144	14	1,175	32	28	587	63	8,502	195	49	2,964	197	31,580	933	3
4 California	106	2,664	362	33,597	1,350	55	3,783	590	66,694	1,895	161	6,447	932	99,291	3,245	267	16,737	2,393	274,351	9,480	4
5 Colorado	30	593	87	7,533	309	7	690	23	4,200	292	37	1,288	10	11,803	601	86	5,948	455	59,025	4,508	5
6 Connecticut	8	149	4	1,077	92	13	726	10	2,356	474	21	875	14	3,613	566	61	7,053	916	110,649	4,974	6
7 Delaware	3	57	4	328	39	3	115	19	2,020	59	3	115	19	2,020	59	9	672	111	14,964	4,07	7
8 Dist Columbia	3	149	4	328	39	1	92	18	2,448	86	4	149	22	2,865	125	18	2,470	369	52,619	1,728	8
9 Florida	26	534	85	7,109	178	4	110	37	3,517	71	30	704	122	10,620	249	63	2,549	382	36,909	1,112	9
10 Georgia	40	1,036	111	15,592	481	17	729	61	13,477	312	57	1,785	192	29,626	793	81	3,429	359	79,637	1,612	10
11 Idaho	19	373	69	4,886	118	4	112	20	2,105	59	23	485	89	6,991	177	36	1,166	206	20,750	668	11
12 Illinois	39	982	160	13,570	485	30	2,301	324	30,214	1,096	69	3,783	484	43,844	1,581	243	23,993	362	330,577	12,744	12
13 Indiana	17	258	53	4,385	104	7	405	27	4,196	146	24	663	80	8,581	200	72	5,227	891	97,553	2,939	13
14 Iowa	43	651	138	9,596	282	8	344	44	6,210	182	51	995	182	11,866	464	119	6,098	948	99,911	3,187	14
15 Kansas	24	355	61	5,019	144	6	152	24	2,434	71	30	607	85	7,453	215	88	4,011	632	72,691	2,332	15
16 Kentucky	16	413	34	5,930	174	16	568	45	9,419	240	32	981	79	10,409	424	74	3,965	437	64,735	2,215	16
17 Louisiana	13	373	37	6,466	112	12	537	60	12,728	264	25	860	97	19,214	376	51	3,339	320	67,290	1,882	17
18 Maine	20	495	88	6,207	245	10	340	78	9,788	1,9	30	835	166	11,995	424	66	2,588	409	42,061	1,573	18
19 Maryland	9	254	6	541	178	4	292	35	3,297	162	13	556	41	3,838	340	50	6,046	546	78,259	4,558	19
20 Massachusetts	28	662	120	7,349	321	37	1,839	366	28,634	1,141	65	2,401	496	36,093	1,462	187	15,174	2,649	290,968	9,764	20
21 Michigan	39	810	122	16,410	448	11	472	41	4,072	336	50	1,242	163	20,142	784	141	11,531	1,616	187,743	6,979	21
22 Minnesota	72	1,012	282	18,759	481	16	1,339	128	26,817	648	88	2,411	410	46,679	1,129	162	8,115	1,281	161,190	4,412	22
23 Mississippi	27	830	112	15,563	297	9	361	35	6,255	119	76	1,200	147	21,846	416	57	2,269	254	37,976	749	23
24 Missouri	35	1,922	182	10,665	1,505	14	576	73	7,718	299	49	2,568	255	18,383	1,804	115	10,623	1,232	140,181	6,792	24
25 Montana	9	158	51	3,546	84	1	172	22	2,462	57	12	330	73	6,003	141	41	2,266	397	40,969	1,255	25
26 Nebraska	49	851	175	12,334	255	2	124	9	4,036	75	51	975	184	13,210	360	83	3,593	529	57,883	1,802	26
27 Nevada	2	116	88	86	86	1	40	6	1,018	23	1	40	6	1,018	23	34	1,740	325	3,816	118	27
28 New Hampshire	2	116	88	86	86	4	190	48	3,919	125	6	306	48	4,007	214	34	1,740	325	3,816	118	28
29 New Jersey	13	244	22	959	144	16	697	80	5,140	360	29	941	102	6,099	504	116	12,959	1,840	207,665	8,685	29
30 New Mexico	3	31	6	294	9	3	100	8	468	31	6	131	14	762	40	30	1,496	125	14,526	644	30
31 New York	75	2,454	468	25,868	1,341	55	4,885	863	73,786	2,915	130	7,339	1,331	99,654	4,316	479	47,712	6,408	767,181	37,934	31
32 North Carolina	30	670	22	7,896	268	17	926	67	12,182	436	37	1,556	99	20,085	704	122	6,334	705	116,908	3,666	32
33 North Dakota	7	92	23	2,811	42	2	42	10	938	18	9	134	39	2,659	60	181	2,028	365	41,900	1,285	33
34 Ohio	24	491	58	7,341	221	30	1,644	71	7,745	1,106	64	2,135	129	15,086	1,327	181	16,837	2,908	244,408	10,499	34
35 Oklahoma	47	1,267	172	21,144	489	17	742	90	10,014	402	64	2,009	262	37,068	891	83	3,266	469	58,612	1,499	35
36 Oregon	17	349	62	6,283	127	10	801	54	7,285	526	27	1,141	116	15,573	675	55	3,352	425	67,100	1,093	36
37 Pennsylvania	59	1,054	171	8,941	615	16	893	96	9,967	454	51	1,847	267	18,208	1,069	231	33,243	4,135	499,519	22,375	37
38 Rhode Island	3	17	33	22	22	2	148	25	2,247	64	5	207	25	2,280	86	19	2,055	368	28,724	1,217	38
39 South Carolina	9	182	19	2,914	70	2	65	6	673	34	11	247	25	3,487	164	43	2,110	29	39,593	1,250	39
40 South Dakota	16	262	61	4,746	115	4	156	25	2,769	87	20	418	86	7,315	202	45	1,893	343	32,609	929	40
41 Tennessee	31	660	51	10,168	291	11	423	33	6,976	167	42	1,083	104	16,544	458	73	3,762	370	65,828	2,026	41
42 Texas	106	2,550	310	44,347	956	49	1,942	200	41,754	919	155	4,701	610	86,111	1,875	225	10,045	1,146	198,211	4,853	42
43 Utah	12	168	39	1,954	50	3	50	10	902	24	15	218	49	2,886	74	26	1,387	255	22,257	683	43
44 Vermont	2	22	210	12	12	4	250	36	5,900	155	6	212	36	5,410	167	25	1,816	168	22,287	1,355	44
45 Virginia	16	548	40	5,715	278	19	1,014	119	20,419	770	35	1,562	139	26,134	848	82	4,819	501	90,039	2,640	45
46 Washington	23	537	105	5,554	213	11	466	63	6,961	279	39	1,003	168	11,815	442	83	5,268	850	87,216	2,746	46
47 West Virginia	14	674	60	20,626	262	22	1,689	144	39,797	984	36	2,313	204	59,991	1,246	60	4,089	387	91,842	2,146	47
48 Wisconsin	30	492	129	7,455	228	17	763	97	7,293	414	47	1,256	188	14,745	642	140	9,691	1,510	154,951	5,365	48
49 Wyoming	8	118	31	2,163	44	2	55	6	348	12	10	153	37	2,311	56	17	323	64	5,497	127	49
50 Totals (1935)	1,250	29,913	4,354	413,997	14,212	627	34,946	4,737	537,590	18,697	1,882	64,859	8,741	946,587	37,909	4,522	333,427	44,893	5,424,102	200,789	50
51 (1934)	1,310	30,499	4,391	366,113	13,046	679	37,072	4,035	458,303	15,985	1,939	62,501	8,429	824,616	25,051	4,855	339,213	44,650	4,988,351	185,095	51
52 (1933)	1,435	33,855	4,965	381,561	13,746	745	40,335	5,094	485,112	16,700	2,115	68,500	9,100	900,000	27,000	5,100	372,000	46,000	5,100,000	190,000	52
53 (1932)	1,550	36,750	5,000	425,000	14,000	800	43,000	5,200	500,000	17,000	2,200	70,000	9,500	950,000	28,000	5,200	380,000	47,000	5,200,000	195,000	53
54 (1931)	1,600	38,000	5,300	450,000	14,500	850	45,000	5,500	550,000	17,500	2,300	75,000	10,000	1,000,000	30,000	5,300	390,000	48,000	5,300,000	200,000	54
55 (1930)	1,650	39,000	5,500	475,000	15,000	900	47,000	5,800	575,000	18,000	2,400	80,000	10,500	1,050,000	31,000	5,400	400,000	50,000	5,400,000	205,000	55
56 (1929)	1,700	40,000	5,800	500,000	15,500	950	49,000	6,000	600,000	18,500	2,500	85,000	11,000	1,100,000	32,000	5,500	410,000	52,000	5,500,000	210,000	56
57 (1928)	1,750	41,000	6,000	525,000	16,000	1,000	51,000	6,200	625,000	19,000	2,600	90,000	11,500	1,150,000	33,000	5,600	420,000	54,000	5,600,000	215,000	57
58 (1927)	1,800	42,000	6,200	550,000	16,500	1,050	53,000	6,400	650,000	19,500	2,700	95,000	12,000	1,200,000	34,000	5,700	430,000	56,000	5,700,000	220,000	58

Table 2—HOSPITAL FACILITIES BY STATES AND BY TYPE OF SERVICE

Marginal No		General			Nervous and Mental			Tuberculosis			Maternity			Industrial			Lve, Ear, Nose and Throat			Marginal No																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
		Hospitals	Beds	Patients Admitted	Hospitals	Beds	Patients Admitted	Hospitals	Beds	Patients Admitted	Hospitals	Beds	Patients Admitted	Hospitals	Beds	Patients Admitted	Hospitals	Beds	Patients Admitted																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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The list beginning on page 798 was subject to additions and removals of hospitals until going to press totals of the list therefore may vary slightly from tables 1 and 2 which were prepared as of Dec 31 1935

Table 2—HOSPITAL FACILITIES BY STATES AND BY TYPE OF SERVICE—Continued

Marginal No	Children's	Orthopedic			Isolation			Convalescent and Rest			Hospital Departments of Institutions			All Other Hospitals			Totals			Marginal No		
	Hospitals	Beds	Patients	Average	Hospitals	Beds	Patients	Average	Hospitals	Beds	Patients	Average	Hospitals	Beds	Patients	Average	Hospitals	Beds	Patients	Average		
1 Alabama	1	70	80	28													12	900	400	90	1	
2 Arizona	1	50	64	33													8	913	200	46	2	
3 Arkansas	1	40	10	604	121												6	913	200	46	3	
4 California	4	407	10	604	121												268	64,717	3,062	487,474	53,890	4
5 Colorado	1	117	18	2,017	114												100	13,010	377	69,724	10,410	5
6 Connecticut	1	200															82	17,884	1,014	126,195	15,013	6
7 Delaware	1	200															14	2,312	111	1,792	1,969	7
8 District of Columbia	1	200															32	13,268	576	40,868	11,004	8
9 Florida	1	24	31	18													108	14,081	531	110,567	11,992	9
10 Georgia	1	0	2	562	26												49	3,311	218	228,660	2,817	10
11 Idaho	1	111															4	3,372	30	1,847	3,803	11
12 Illinois	2	160															131	22,064	1,154	147,411	18,856	12
13 Indiana	1	10	2	2													131	10,720	1,097	137,340	10,710	14
14 Iowa	1	46	3	269	12												124	14,508	746	107,764	10,712	15
15 Kansas	1	97															100	15,000	563	93,822	11,629	16
16 Kentucky	1	60															63	13,917	471	158,632	12,481	17
17 Louisiana	1	200															68	9,045	435	48,189	5,821	18
18 Maine	1	100	465	62													81	18,021	669	111,488	15,864	19
19 Maryland	0	50	811	228													266	56,860	3,087	351,911	48,207	20
20 Massachusetts	1	10	7,011	201													232	43,074	2,080	306,069	40,300	21
21 Michigan	1	2	9	21													77	27,820	1,529	207,062	22,445	22
22 Minnesota	1	6	1,210	21													77	9,011	306	50,610	6,068	23
23 Mississippi	2	66	12	1,081	286												57	28,528	1,706	203,169	22,747	24
24 Missouri	1	100															103	10,319	614	72,956	8,011	25
25 Montana	1	110															18	1,060	64	8,091	702	26
26 Nebraska	1	100	107	11													28	5,010	338	37,016	3,963	27
27 Nevada	1	60	107	37													26	41,014	2,301	269,017	34,015	28
28 New Hampshire	1	30	10	10													58	18,414	1,682	129,331	14,777	29
29 New Jersey	1	100	107	37													19	3,680	10,809	2,006	2,006	30
30 New Mexico	1	100	107	37													58	18,414	1,682	129,331	14,777	31
31 New York	1	100	107	37													58	18,414	1,682	129,331	14,777	32
32 North Carolina	1	100	107	37													58	18,414	1,682	129,331	14,777	33
33 North Dakota	1	100	107	37													58	18,414	1,682	129,331	14,777	34
34 Ohio	1	100	107	37													58	18,414	1,682	129,331	14,777	35
35 Oklahoma	1	100	107	37													58	18,414	1,682	129,331	14,777	36
36 Oregon	1	100	107	37													58	18,414	1,682	129,331	14,777	37
37 Pennsylvania	1	100	107	37													58	18,414	1,682	129,331	14,777	38
38 Rhode Island	1	100	107	37													58	18,414	1,682	129,331	14,777	39
39 South Carolina	1	100	107	37													58	18,414	1,682	129,331	14,777	40
40 South Dakota	1	100	107	37													58	18,414	1,682	129,331	14,777	41
41 Tennessee	1	100	107	37													58	18,414	1,682	129,331	14,777	42
42 Texas	1	100	107	37													58	18,414	1,682	129,331	14,777	43
43 Utah	1	100	107	37													58	18,414	1,682	129,331	14,777	44
44 Vermont	1	100	107	37													58	18,414	1,682	129,331	14,777	45
45 Virginia	1	100	107	37													58	18,414	1,682	129,331	14,777	46
46 Washington	1	100	107	37													58	18,414	1,682	129,331	14,777	47
47 West Virginia	1	100	107	37													58	18,414	1,682	129,331	14,777	48
48 Wisconsin	1	100	107	37													58	18,414	1,682	129,331	14,777	49
49 Wyoming	1	100	107	37													58	18,414	1,682	129,331	14,777	50
Totals (1935)	51,187	118,877	57,015	3,111													6,219	1,076,340	53,310	7,700,942	876,680	51
1 Alabama	1	70	80	28													89	11,718	48	47,303	10,740	52
2 Arizona	1	50	64	33													94	8,192	37	70	6,462	53
3 Arkansas	1	40	10	604	121												103	8,268	18,124	849	6,645	54
4 California	4	407	10	604	121												74	4,193	127,892	3,701	6,362	55
5 Colorado	1	117	18	2,017	114												76	4,107	19,304	2,845	6,613	56
6 Connecticut	1	200															126	10,140	90	71,401	775,396	57
7 Delaware	1	200															126	10,140	90	71,401	775,396	58
8 District of Columbia	1	200															126	10,140	90	71,401	775,396	59
9 Florida	1	24	31	18													126	10,140	90	71,401	775,396	60
10 Georgia	1	0	2	562	26												126	10,140	90	71,401	775,396	61
11 Idaho	1	111															126	10,140	90	71,401	775,396	62
12 Illinois	2	160															126	10,140	90	71,401	775,396	63
13 Indiana	1	10	2	2													126	10,140	90	71,401	775,396	64
14 Iowa	1	46	3	269	12												126	10,140	90	71,401	775,396	65
15 Kansas	1	97															126	10,140	90	71,401	775,396	66
16 Kentucky	1	60															126	10,140	90	71,401	775,396	67
17 Louisiana	1	200															126	10,140	90	71,401	775,396	68
18 Maine	1	100	465	62													126	10,140	90	71,401	775,396	69
19 Maryland	0	50	811	228													126	10,140	90	71,401	775,396	70
20 Massachusetts	1	10	7,011	201													126	10,140	90	71,401	775,396	71
21 Michigan	1	2	9	21													126	10,140	90	71,401	775,396	72
22 Minnesota	1	6	1,210	21													126	10,140	90	71,401	775,396	73
23 Mississippi	2	66	12	1,081	286												126	10,140	90	71,401	775,396	74
24 Missouri	1	100															126	10,140	90	71,401	775,396	75
25 Montana	1	110															126	10,140	90	71,401	775,396	76
26 Nebraska	1	100	107	11													126	10,140	90	71,401	775,396	77
27 Nevada	1	60	107	37													126	10,140	90	71,401	775,396	78
28 New Hampshire	1	30	10	10													126	10,140	90	71,401	775,396	79
29 New Jersey	1	100	107	37													126	10,140	90	71,401	775,396	80
30 New Mexico	1	100	107	37													126	10,140	90	71,401	775,396	81
31 New York	1	100	107	37													126	10,140	90	71,401	775,396	82
32 North Carolina	1	100	107	37													126	10,140	90	71,401	775,39	

eral hospitals of a number of institutions that previously had been devoted to some specialty. Especially have a number of industrial hospitals in recent years devoted themselves increasingly to general practice. A number of these have been transferred to the classification of general hospitals.

*Totals According to Type of Service 1935
Condensed from Table 2*

	Hospitals	Beds	Bassinets	Patients Admitted	Average Census	Patient Days	Avg. Length of Stay
General	4,257	406,174	48,757	6,867,870	261,294	95,372,310	14
Nervous and mental	792	530,222	132	173,109	508,448	18,583,201	1,072
Tuberculosis	496	70,373	58	86,113	60,738	22,169,340	257
Maternity	121	6,141	3,895	66,693	3,582	1,307,430	20
Industrial	52	3,421	11	41,432	1,576	575,240	14
Eye, ear, nose and throat	44	2,263	11	97,181	1,089	39,480	4
Children's	51	4,874	118	83,015	3,115	1,136,975	14
Orthopedic	68	6,394	12	28,980	5,010	1,824,600	65
Isolation	66	7,384	70	47,004	3,301	1,204,560	26
Convalescent and rest	135	6,233	34	28,218	4,437	1,619,500	57
Hospital departments of institutions	275	20,793	234	143,434	13,859	5,058,530	35
All other hospitals	89	11,748	48	47,593	10,240	3,734,600	79
Totals	6,246	1,063,300	53,310	7,709,942	876,689	319,991,485	42

NERVOUS AND MENTAL HOSPITALS

During the past year, hospitals for nervous and mental patients have decreased from 614 to 592 and in the same time the capacity has increased from 513,845 to 530,522, a net increase in capacity of 16,677 beds. Patients admitted during 1935 numbered 173,109, an increase of 694 over the record of the previous year. The average census of patients was 508,448, as compared with 488,481 a year ago. The percentage of beds occupied was 95.84. The 592 hospitals in this classification include mental, nervous and mental, mentally deficient, epileptic, and institutions for special types.

Analysis of General Hospitals by Control

	Hospitals	Beds	Patients Admitted	Average Census	Patient Days	Length of Stay
Federal	257	50,938	357,859	35,271	12,873,915	36
State	49	15,113	260,072	15,124	5,202,260	21
County	200	28,862	413,947	22,226	8,221,990	20
City	212	40,334	735,407	33,167	12,104,955	16
City county	36	6,602	103,615	4,810	1,750,600	17
Total governmental general	754	142,049	1,870,970	110,898	40,477,770	22
Church	840	101,107	1,006,308	60,538	22,103,640	12
Fraternal	20	1,899	20,851	1,041	349,965	18
Associations and restricted corporations	1,269	113,516	2,207,110	67,793	24,794,445	11
Total nonprofit general	2,069	216,522	4,134,599	129,392	47,228,040	11
Individual and partnership	976	20,752	376,716	8,478	3,076,220	8
Corporations (unrestricted as to profit)	438	24,851	455,655	12,576	4,590,240	9
Total proprietary general	1,414	45,603	832,371	21,054	7,666,460	9
Grand total general hospitals	4,257	406,174	6,867,870	261,294	95,372,310	14

TUBERCULOSIS HOSPITALS

The registered institutions devoted exclusively to the care of patients suffering from tuberculosis numbered 496, a gain of one during the year. Their capacity is 70,373, which is a gain of 310 during the year. The number of patients admitted was 86,113, as against 82,455 for the previous year. The average census was 60,738, as compared with 59,689 for the previous year. The figures here given for tuberculosis hospitals do not

include the tuberculosis departments of general hospitals. The percentage of beds occupied is 86.43.

A complete report on tuberculosis hospitals and sanatoriums and the tuberculosis departments of other hospitals was published in the Tuberculosis Number of THE JOURNAL, Dec 7, 1935.

MATERNITY HOSPITALS

The maternity hospitals now number 121, having lost nine since the last census. The capacity is 6,141 beds and 3,825 bassinets. In the last previous census there were 7,625 beds and 4,131 bassinets. Total patients admitted, not including new-born infants, during the year 1935 was 66,693 compared with 76,980 for the previous year. The average census of these patients was 3,582, as compared with 4,647 of last year. Bed occupancy was 58.33 per cent.

Births in maternity hospitals numbered 35,784, or 4.6 per cent of the births in all hospitals. The cor-

Births in Hospitals

	1929	1934	1935
According to Ownership or Control			
Federal	2,296	6,098	6,091
State	9,125	15,348	24,804
County	17,527	39,615	41,011
City	45,787	70,711	69,514
City county	8,806	12,357	11,644
Total governmental	83,541	144,419	153,000
Church	209,728	210,591	236,637
Fraternal	1,730	1,630	1,636
Associations and restricted corporations	—	269,137	246,805
Industrial	4,327	—	—
Independent associations	283,126	—	—
Total nonprofit	—	481,364	525,048
Individual and partnership	39,436	30,865	36,717
Corporations (unrestricted as to profit)	—	44,495	54,805
Total proprietary	—	75,360	91,522
Total nongovernmental	538,355	556,724	616,600
According to Type of Service			
General	561,754	648,995	737,465
Maternity	53,019	48,048	35,784
Industrial	4,425	2,856	794
Children's	—	862	—
Hospital departments of institutions	277	326	501
All other hospitals	1,561	227	56
Total births in all hospitals	621,896	701,143	760,660

* Owing to reclassification births in industrial hospitals are carried under the heading "All other hospitals."

responding percentage for 1934 was 6.8 and for 1933 it was 10.

INDUSTRIAL HOSPITALS

The classification of industrial hospitals includes hospitals that are devoted exclusively or mainly to the care of accidents and conditions arising in industries. They are run by railroads, mills and other industrial plants. A number of these were found to have become more general than industrial. They have been reclassified as general hospitals.

The number of industrial hospitals now, therefore, is only fifty-two, as compared with 113 a year ago. The total number of beds in these hospitals is 3,421. They admitted 41,432 bed patients and the average census was 1,576. The bed occupancy was 46.07 per cent.

EYE, EAR, NOSE AND THROAT HOSPITALS

The eye, ear, nose and throat hospital also tends to decrease in number. There are at present forty-four of these as compared with fifty-five last year. The capacity is 2,263, they admitted 97,181 patients and had an average census of 1,089. The percentage of occupancy was 48.12.

CHILDREN'S HOSPITALS

The fifty-one children's hospitals now in the Register have a total capacity of 4 874 beds and 118 bassinets. They admitted 83 015 patients and had an average census of 3 115. The percentage of all beds occupied during 1935 was 63.91.

Complete figures are not available on children admitted to general hospitals. There can be no reasonable doubt that the figures would be several times as large as for children's hospitals.

A glance at the column headed "Children's" in table 2 will show the trend in children's hospitals year by

ISOLATION HOSPITALS

The trend in isolation hospitals as shown in table 2 is downward as to number and slightly upward as to number of patients admitted and the average census. The sixty-six hospitals now in existence under this classification are mainly well equipped institutions for the study of contagious diseases, isolation per se being one object in their design.

They have a capacity of 7 384 beds and seventy bassinets, and they admitted 47 004 patients last year. The average census was 3 301. The percentage of occupancy was 44.70.

COMPARISON OF HOSPITAL DATA FOR 1934 AND 1935

Year	Hospitals		Beds		Bassinets		Births		Patients Admitted		Average Census		Mar No
	1934	1935	1934	1935	1934	1935	1934	1935	1934	1935	1934	1935	
1 Alabama	86	86	11 779	12 000	460	466	5 774	6 237	87 188	96 105	8 470	9 247	1
2 Arizona	66	62	4 700	4 601	217	218	2 132	2 353	71 728	35 989	5 115	5 312	2
3 Arkansas	67	67	8 66	8 945	223	236	2 037	2 240	41 81	46 291	6 607	7 015	3
4 California	332	368	63 149	64 971	3 671	3 662	41 42	44 701	414 670	487 435	48 891	51 891	4
5 Colorado	103	105	12 414	11 010	361	361	1 902	6 722	80 34	92 734	8 58	10 430	5
6 Connecticut	89	82	17 349	17 884	1 055	1 014	15 071	16 347	120 676	126 516	14 584	15 013	6
7 Delaware	10	14	2 285	2 542	112	111	1 761	1 898	14 956	15 722	1 798	1 960	7
8 District of Columbia	37	32	12 557	12 268	484	525	8 971	9 996	89 071	91 898	10 277	11 004	8
9 Florida	93	89	9 606	9 481	541	539	5 954	6 490	70 421	77 317	6 994	7 262	9
10 Georgia	109	105	14 061	14 681	561	571	8 708	9 961	110 977	116 457	10 637	11 878	10
11 Idaho	51	49	3 301	3 331	278	248	2 399	2 600	27 218	28 591	2 704	2 417	11
12 Illinois	320	321	60 921	71 949	4 071	4 040	1 076	60 550	66 392	643 141	67 88	60 971	12
13 Indiana	129	13	23 011	22 004	1 140	1 114	12 210	21 910	132 487	142 411	18 191	18 806	13
14 Iowa	159	158	19 614	19 261	1 101	1 077	12 041	13 671	126 365	137 340	15 56	16 030	14
15 Kansas	121	124	12 901	14 258	751	741	7 756	8 861	90 026	103 764	10 156	10 712	15
16 Kentucky	100	100	12 548	13 077	551	561	6 031	6 481	84 251	90 822	10 120	11 620	16
17 Louisiana	61	67	13 991	13 957	411	471	8 888	10 261	1 9 601	1-8 132	11 191	12 381	17
18 Maine	78	68	6 64	6 741	436	431	3 782	4 061	48 484	48 171	5 704	6 621	18
19 Maryland	82	81	17 771	18 071	646	660	8 901	9 670	104 192	111 488	14 501	15 864	19
20 Massachusetts	212	204	6 414	6 869	1 141	1 087	9 961	41 402	349 291	351 791	47 61	48 201	20
21 Michigan	242	242	42 571	4 074	2 111	2 080	25 063	30 811	261 371	266 960	31 192	35 001	21
22 Minnesota	211	219	21 004	21 701	1 571	1 291	18 978	20 867	188 891	207 692	21 41	22 541	22
23 Mississippi	71	71	7 991	9 911	704	507	2 721	3 007	49 692	51 630	5 717	6 968	23
24 Missouri	154	150	27 626	28 281	1 494	1 306	17 269	18 472	194 31	205 439	21 191	22 547	24
25 Montana	9	57	5 471	5 200	429	448	4 001	4 698	38 922	47 007	3 821	3 787	25
26 Nebraska	102	10	10 068	10 741	599	614	6 018	7 007	67 65	72 994	7 706	8 074	26
27 Nevada	10	18	1 051	1 061	51	64	566	692	8 409	8 091	571	792	27
28 New Hampshire	45	41	4 901	5 010	259	258	3 457	4 091	32 662	37 016	5 801	6 061	28
29 New Jersey	172	167	40 771	41 04	2 299	2 201	24 285	23 870	268 079	269 037	32 592	34 001	29
30 New Mexico	50	50	5 811	5 841	177	181	1 34	1 571	21 609	25 407	2 719	2 498	30
31 New York	304	288	160 880	166 841	7 561	7 021	121 071	128 21	1 078 114	1 12 371	137 857	141 277	31
32 North Carolina	141	148	1 781	1 141	129	790	6 8	8 716	110 320	134 619	11 197	11 691	32
33 North Dakota	5	55	444	5 358	388	398	8 816	4 711	49 245	50 804	4 038	4 37	33
34 Ohio	364	355	51 994	50 011	2 587	2 587	22 270	23 900	317 680	351 781	41 671	43 427	34
35 Oklahoma	118	116	12 24	12 028	561	557	7 152	8 107	87 611	91 311	7 329	11 761	35
36 Oregon	7	7	9 716	9 790	481	472	5 845	5 91	70 717	71 708	7 347	7 819	36
37 Pennsylvania	258	260	80 171	80 969	4 288	4 288	65 304	66 767	668 8	705 904	64 895	66 227	37
38 Rhode Island	22	20	7 409	7 961	402	412	7 419	5 768	77 881	37 190	6 121	6 123	38
39 South Carolina	67	60	7 861	7 290	261	29	3 277	3 630	35 717	63 342	6 271	6 412	39
40 South Dakota	50	50	4 968	5 271	360	370	3 171	3 469	37 641	41 30	3 446	4 000	40
41 Tennessee	99	99	14 059	14 454	501	511	5 11	5 881	107 942	110 250	10 858	11 406	41
42 Texas	289	288	29 758	30 829	1 401	1 418	20 741	23 194	247 022	270 427	21 708	23 072	42
43 Utah	51	51	3 028	3 30	270	296	4 531	4 875	26 166	29 050	2 189	2 709	43
44 Vermont	3	3	3 409	3 46	177	168	2 072	2 178	27 669	24 331	2 719	2 870	44
45 Virginia	101	110	18 441	18 710	581	571	7 194	7 341	107 686	116 681	14 941	14 710	45
46 Washington	121	119	16 819	16 624	1 044	971	11 788	12 6	111 497	122 099	12 818	12 472	46
47 West Virginia	11	78	9 02	0 447	401	440	3 479	4 01	87 128	104 968	6 908	6 758	47
48 Wisconsin	22	221	20 466	20 241	1 694	1 136	19 267	21 771	190 771	211 572	22 652	23 819	48
49 Wyoming	27	28	2 221	2 221	192	117	1 77	1 69	13 172	16 999	1 616	1 870	49
50 Totals	6 334	6 246	1 048 101	1 016 0	53 027	51 710	101 14	719 660	7 147 416	7 009 942	800 095	816 689	50

since 1927, there being in that time some decrease both in the capacity of those hospitals and in the number of patients admitted. The average size of those in existence is larger than in 1927.

ORTHOPEDIC HOSPITALS

There are sixty-eight orthopedic hospitals with a capacity of 6 394 beds. They admitted 28,280 patients and had an average census of 5 010. The total capacity of these hospitals remained about the same with only a slight increase in the number of patients admitted. The percentage of beds occupied was 78.35.

Separate figures for the orthopedic departments of general and other hospitals have not been obtained. They would without doubt show a great deal more work done in those departments than in the special orthopedic hospitals.

An increasing amount of hospitalization of contagious diseases is carried out by general hospitals, actual figures for which have not been obtained.

CONVALESCENT AND REST HOSPITALS

The classification of convalescent and rest hospitals comprises the least definite of all types of service. We have included only those hospitals that have reported themselves as specializing in providing for convalescence and rest and which provide adequate medical care and nursing service, with equipment sufficient for the purposes for which the institution was designed.

We have 135 of these institutions on the Register, with a capacity of 6,233 beds and thirty-four bassinets, admitting 28 218 patients and having an average census of 4 437. Seventy-two per cent of all beds were occupied during the past year.

Reference to the convalescent and rest column in table 2 shows that there are twenty states reporting no hospitals under this classification and about as many more showing only one or two such institutions. These states are, of course, not without facilities for convalescent care. Most of this service is provided by general hospitals, in which patients are quite welcome to remain throughout their period of convalescence.

Many places used for convalescence and more or less adapted for that purpose are not shown in the Register because they hardly seem to fit in with a classification of hospitals and sanatoriums. Accommodations for convalescents are also afforded for certain types of cases in various special hospitals, such as those for tuberculosis and for mental diseases. Nor can any one question the importance of the home from the standpoint of the amount of convalescence that takes place there.

INSTITUTIONAL HOSPITALS

A phenomenon worthy of notice in the hospital field is the decline in hospital departments of institutions, as

Pathology Departments

	Number of Clinical Laboratories		Directors			
	1934	1935	M D		Other*	
			1934	1935	1934	1935
Alabama	59	58	38	39	21	19
Arizona	27	29	16	18	11	11
Arkansas	51	47	34	37	17	10
California	231	236	164	175	67	61
Colorado	69	73	45	52	24	21
Connecticut	49	49	39	42	10	7
Delaware	12	11	9	9	3	2
District of Columbia	24	24	24	22		2
Florida	68	62	43	39	25	23
Georgia	82	84	53	51	29	33
Idaho	28	28	14	15	14	13
Illinois	254	259	170	189	84	70
Indiana	95	90	59	63	36	27
Iowa	111	113	68	78	43	35
Kansas	80	81	56	56	24	25
Kentucky	73	70	36	37	37	33
Louisiana	48	54	36	38	12	16
Maine	43	43	25	27	18	16
Maryland	62	60	35	48	27	12
Massachusetts	188	191	144	156	44	35
Michigan	152	159	104	113	48	46
Minnesota	134	131	82	81	52	50
Mississippi	60	65	24	30	36	35
Missouri	108	108	83	84	25	24
Montana	29	27	15	20	14	7
Nebraska	57	64	41	44	16	20
Nevada	6	7	4	6	2	1
New Hampshire	27	28	20	22	7	6
New Jersey	114	115	96	95	18	20
New Mexico	23	23	16	17	7	6
New York	460	469	340	341	60	68
North Carolina	108	119	66	66	42	53
North Dakota	29	32	14	16	15	16
Ohio	191	189	124	125	67	64
Oklahoma	87	90	50	50	37	40
Oregon	43	41	29	28	14	13
Pennsylvania	259	285	225	243	54	42
Rhode Island	21	19	17	14	4	5
South Carolina	39	44	22	29	17	15
South Dakota	38	38	27	26	11	12
Tennessee	66	70	39	47	27	23
Texas	197	211	123	137	74	74
Utah	18	19	16	18	2	1
Vermont	20	21	14	16	6	5
Virginia	84	88	59	64	25	24
Washington	72	78	49	54	23	24
West Virginia	62	63	45	41	17	22
Wisconsin	135	141	84	83	51	58
Wyoming	18	18	14	14	4	4
Totals	4 271	4 364	2 950	3 115	1 321	1 249

* Includes all departments reporting directors other than M D and all departments not reporting a director.

a result of the discontinuance of these hospital departments and transfer of patients to existing hospitals. In 1927 there were 530 of these institutional hospitals as compared with 275 at the present time. Their capacity is 20,793 beds and 234 bassinets. Their importance is indicated by the fact that they admitted 143,434 patients last year and had an average census of 13,859. The percentage of beds occupied last year was 66.65.

PATHOLOGY DEPARTMENTS

The table summarizing pathology departments affords an opportunity to study the progress made in each state during the past year with regard to the number of clinical laboratories and the number in charge of physicians. New York State reported 409 hospitals having their

Radiology Departments

	Number of Ray Departments		Directors			
	1934	1935	M D		Other*	
			1934	1935	1934	1935
Alabama	66	68	49	51	17	17
Arizona	37	38	27	28	10	10
Arkansas	51	46	40	41	11	5
California	262	266	196	205	66	61
Colorado	68	72	45	57	23	15
Connecticut	49	49	44	44	5	5
Delaware	11	11	11	11		
District of Columbia	23	24	22	22	1	0
Florida	69	71	49	48	20	23
Georgia	82	85	65	63	17	22
Idaho	40	39	26	23	14	16
Illinois	262	266	195	204	67	62
Indiana	104	105	67	71	37	34
Iowa	127	127	91	98	36	29
Kansas	97	93	74	77	23	16
Kentucky	78	79	56	59	22	20
Louisiana	49	53	40	43	9	10
Maine	52	55	38	43	14	12
Maryland	55	55	43	49	12	6
Massachusetts	185	189	161	174	24	15
Michigan	165	167	145	148	20	19
Minnesota	159	163	109	110	50	53
Mississippi	67	70	49	52	18	18
Missouri	110	113	96	96	14	17
Montana	36	36	25	24	11	12
Nebraska	72	78	58	62	14	16
Nevada	10	10	5	4	5	6
New Hampshire	30	30	26	26	4	4
New Jersey	116	120	102	104	14	16
New Mexico	33	32	28	26	5	6
New York	431	438	358	358	53	50
North Carolina	115	121	86	87	29	34
North Dakota	33	36	20	18	13	18
Ohio	183	181	147	142	36	39
Oklahoma	96	100	57	64	39	36
Oregon	54	51	30	33	15	18
Pennsylvania	267	274	233	246	34	28
Rhode Island	18	17	17	17	1	11
South Carolina	39	44	39	33	9	10
South Dakota	44	41	32	31	12	16
Tennessee	73	74	52	58	21	16
Texas	223	234	162	167	61	64
Utah	26	28	22	25	4	3
Vermont	23	24	20	20	3	4
Virginia	86	88	71	72	15	16
Washington	85	84	65	61	20	23
West Virginia	64	66	45	47	19	19
Wisconsin	141	145	90	98	51	47
Wyoming	23	22	15	16	8	6
Totals	4 589	4 698	3 563	3 686	1 026	1 012

* Includes all departments reporting directors other than M D and all departments not reporting a director.

own clinical laboratories with 341 in charge of physicians. Pennsylvania is second, with 285 laboratories with 243 in charge of physicians. Illinois reported 259 laboratories, with 189 in charge of physicians. California reported 236 laboratories, with 175 in charge of physicians. Texas reported 211 laboratories, with 137 in charge of physicians. Thus, a number of hospitals in every state of the union admitted that they were using nurses and lay technicians as directors of their laboratories, even though they admit that the practice of pathology is the practice of medicine. The total number of hospitals reporting their own clinical laboratories is 4,364, as against 4,271 in 1934. Those having physician-directors number 3,115, as against 2,950 a year ago. Those having lay and registered nurse directors number 1,249, as compared with 1,321 a year ago.

RADIOLOGY DEPARTMENTS

Increase of radiology in hospitals has been rather striking over a period of years. The census shows a total of 4,698 hospitals having their own equipment, as compared with 4,589 a year

ago, an increase of 109. There were 3,686 directed by physician radiologists, as compared with 3,563 a year ago. The departments directed by lay technicians and registered nurses number 1,012, as compared with 1,026 a year ago.

New York has 438 departments with 388 physicians, Pennsylvania 274 departments with 246 physicians, California and Illinois tie each having 266 departments, California having 205 physicians and Illinois 204. Texas reported 234 departments using 167 physicians. All the states but Delaware and Rhode Island admitted having a number of departments without physician directors.

SCHOOLS OF NURSING

Schools of nursing were reported from every state except Nevada. The total number of schools reported was 1,476, and 1,444 of these are accredited by the board of nurse examiners of the state in which the school is located. One thousand two hundred and fifty-eight schools reported the number of students, their

Schools of Nursing

	Number of Schools Reporting	Number of of State Accredited Schools	Number of Schools Reporting Enrollment	Number of Students Reported
Alabama	32	23	22	712
Arizona	3	4	3	147
Arkansas	9	8	7	237
California	39	46	36	2,213
Colorado	17	18	12	677
Connecticut	22	20	21	1,490
Delaware	7	7	7	248
District of Columbia	10	11	9	821
Florida	17	13	13	561
Georgia	20	14	16	716
Idaho	7	9	1	176
Illinois	106	121	93	4,703
Indiana	28	27	26	1,370
Iowa	34	31	30	1,231
Kansas	41	36	33	1,119
Kentucky	20	19	9	491
Louisiana	13	13	11	960
Maine	27	23	23	670
Maryland	30	24	27	990
Massachusetts	90	73	72	4,349
Michigan	33	37	31	2,601
Minnesota	37	37	30	2,013
Mississippi	36	37	31	430
Missouri	22	32	25	1,377
Montana	12	11	11	470
Nebraska	13	14	1	701
Nevada				
New Hampshire	19	16	19	573
New Jersey	52	52	49	2,976
New Mexico	2	2	2	68
New York	140	123	12	6,349
North Carolina	43	44	37	1,062
North Dakota	16	16	13	330
Ohio	42	71	68	3,869
Oklahoma	16	14	14	370
Oregon	9	10	7	493
Pennsylvania	86	125	78	7,168
Rhode Island	5	9	6	533
South Carolina	22	23	16	466
South Dakota	17	16	12	419
Tennessee	27	28	2	1,231
Texas	40	50	4	1,962
Utah	6	6	6	415
Vermont	17	13	11	34
Virginia	29	24	27	909
Washington	24	2	31	936
West Virginia	11	31	22	567
Wisconsin	32	2	30	1,467
Wyoming	1	1	1	20
Total	1,476	1,444	1,258	61,046

aggregate enrollment being 65,046, an average of fifty-two per school. The average per school was forty-five in 1932. In 1930, 26 per cent of the hospitals had accredited schools of nursing; in 1935, 23 per cent. In the last five years the number of accredited schools has dropped 320, or 18 per cent, and in the last year the number has dropped eighty-seven, or about 6 per cent.

Reference to the tabulated returns seems to indicate that a considerable number of hospitals operating

schools of nursing evidently omitted to answer the question as to whether they had a school of nursing. This is noticeable in Illinois, in which the state board reports 121 schools and our census brought answers from only 106. The Pennsylvania board reported 128 schools and we heard from only 86.

Hospitals Reporting Patients' Libraries and Ambulance Service in Hospitals

	Patients Libraries	Hospitals Owning Ambulances	Hospitals Reporting Calls	Number of Calls
Alabama	23	7	4	8,430
Arizona	15	7	2	225
Arkansas	20	3	3	536
California	167	41	23	40,064
Colorado	45	7	7	4,386
Connecticut	53	22	18	7,369
Delaware	11	3	3	154
District of Columbia	19	9	5	19,681
Florida	32	5	3	1,333
Georgia	34	13	7	14,001
Idaho	10	2	1	10
Illinois	147	13	11	9,370
Indiana	65	7	5	6,501
Iowa	76	5	3	944
Kansas	49	7	6	3,073
Kentucky	27	3	2	6,061
Louisiana	21	7	4	6,914
Maine	46	6	6	2,233
Maryland	47	8	4	1,323
Massachusetts	168	47	42	23,405
Michigan	103	21	16	2,919
Minnesota	96	17	9	12,721
Mississippi	16	3	2	169
Missouri	63	9	3	49,032
Montana	24	3		
Nebraska	46	4	4	1,878
Nevada	6	2	1	50
New Hampshire	32	7	2	230
New Jersey	94	52	44	69,416
New Mexico	20	8	5	713
New York	323	160	120	391,344
North Carolina	46	5	3	1,152
North Dakota	23	6	5	638
Ohio	108	8	4	5,297
Oklahoma	22	6	3	2,418
Oregon	24	6	4	901
Pennsylvania	187	90	86	33,367
Rhode Island	17	9	6	12,334
South Carolina	16	3	3	2,473
South Dakota	21	3	3	847
Tennessee	34	9	6	15,163
Texas	82	12	9	11,429
Utah	11	2	1	36
Vermont	24	2	1	83
Virginia	49	12	9	4,294
Washington	49	12	9	1,787
West Virginia	24	8	3	271
Wisconsin	97	12	6	3,877
Wyoming	9	4	3	1,133
Totals	2,749	717	533	802,930

It is hoped that all hospitals will answer this question in full next year, because of the keen interest on the part of many hospitals in the question whether or not to maintain a school of nursing.

PATIENTS' LIBRARIES

In this census for the first time the question was asked whether or not the hospital had a library for patients. The question was answered in the affirmative by 2,749 hospitals. Since the size and nature of the library was not stressed, little is known beyond the fact that it may be assumed that a wide variety of libraries would be found among the hospitals reporting.

There were 325 in New York, 187 in Pennsylvania, 168 in Massachusetts, 167 in California, 147 in Illinois, 108 in Ohio, and 103 in Michigan.

AMBULANCE SERVICE

Seven hundred and seventeen hospitals reported that they operate and own ambulances. The number of ambulance calls was reported by 533 hospitals, and the entire number of calls added up to 802,930.

Many hospitals that do not own ambulances obtain their ambulance service as needed through either private or public ambulance services.

HOSPITALS IN ALASKA, CANAL ZONE GUAM, HAWAII, PHILIPPINE ISLANDS, PUERTO RICO AND VIRGIN ISLANDS

A steady, slight increase in the hospital service for this group characterized the year 1935 as it did in former years. The Philippine Islands have 101 hos-

Hospitals in Alaska, Canal Zone, Guam, Hawaii, Philippine Islands, Puerto Rico and Virgin Islands

	Hospitals	Beds	Basinsets
Alaska	19	363	62
Canal Zone	10	1,862	39
Guam	2	92	17
Hawaii	47	4,770	252
Philippine Islands	101	8,367	129
Puerto Rico	49	3,452	22
Virgin Islands	5	320	26
Totals	(1935) 233	19,416	1,150
	(1934) 221	18,480	1,020
	(1933) 215	18,794	1,036
	(1932) 204	18,330	729

pitals. Puerto Rico has forty-nine hospitals, Hawaii has forty-seven hospitals, Alaska has nineteen hospitals, Canal Zone has ten hospitals, the Virgin Islands have five hospitals and Guam has two hospitals.

METHODS OF REGISTERING AND APPROVING HOSPITALS

The inclusion of any hospital in the Register is an indication that evidence concerning irregular or unsafe practices in that hospital has not been available to the Council on Medical Education and Hospitals. Considerable investigation is carried out in the case of each hospital before it is admitted to the Register.

First, hospitals supply information regarding their capacity, equipment, classification and list of staff. Each member of the staff is then looked up in the biographic files of the Association.

Second, a personal visit by a member of our staff of hospital examiners is made to each hospital approved, or applying for approval for internships or for residencies. An increasing number of other hospitals are being inspected.

Third, information and advice are obtained from the secretaries and other members of the county medical societies, from state, city or county health departments from the councilors of the state medical association for the district in which the hospital is located, and from other sources. Investigation of hospitals for internship and residency approval is more comprehensive than for registration.

The list of registered hospitals, by states, is presented on later pages of this issue, where considerable data are given about each hospital. Classifications, symbols and

strictly hospitals. In the statistics the two classifications are consolidated.

HOSPITALS REFUSED REGISTRATION

There are 564 institutions which, because of alleged unethical or questionable practices, admission to their staffs of members who are seriously unqualified, either morally or professionally, flagrant methods of advertising, or for other valid reasons, are deemed unworthy of being included in any published list of reputable hospitals.

Only a little over 1 per cent of the total capacity of all hospitals is included in the 564 institutions that are refused registration. From the standpoint of hospitalization, therefore, they are as a rule not needed.

Hospitals Refused Registration

	No. of Hospitals	Beds	Basinsets
Alabama	3	162	40
Arizona	3	61	13
Arkansas	11	296	15
California	19	2,311	14
Colorado	22	471	8
Connecticut	2	51	10
Delaware			
District of Columbia			
Florida	14	28	27
Georgia	2	4	
Idaho	2	4	6
Illinois	41	1,98	143
Indiana	13	683	93
Iowa	29	324	49
Kansas	22	736	41
Kentucky	10	153	4
Louisiana	2	22	4
Maine	6	113	17
Maryland	4	71	
Massachusetts	16	421	90
Michigan	19	476	10
Minnesota	9	198	19
Mississippi	2	72	1
Missouri	24	1,131	33
Montana	6	106	16
Nebraska	18	417	27
Nevada	2	20	
New Hampshire			
New Jersey	9	177	31
New Mexico	1	3	
New York	25	1,010	180
North Carolina	4	158	8
North Dakota	1	30	2
Ohio	29	683	97
Oklahoma	18	479	40
Oregon	14	431	69
Pennsylvania	21	371	40
Rhode Island	1	65	3
South Carolina		67	8
South Dakota	4	102	14
Tennessee	8	192	1
Texas	23	371	47
Utah			
Vermont	1		
Virginia	2	3	3
Washington	20	464	70
West Virginia	2	42	
Wisconsin	10	744	7
Wyoming	4	111	10
Totals	564	16,786	1,151

Not only are they left out of the Register and American Medical Directory but their names are consistently omitted from all the publications of the Association and they are refused admission to the advertising columns.

This helps to distinguish between the good and the bad in hospitals. As a result, it is considered a disgrace among hospitals and physicians to be refused registration, and institutions that are rejected are frequently aroused and correct the objectionable practices in order that they may be recognized. Public and professional opinion forces many such institutions to sell their buildings to more reputable owners or to close up.

The Register is used as a basic list of hospitals. Industrial and governmental agencies use it in selecting hospitalization for their dependents and beneficiaries. Physicians almost universally observe the Register in referring their patients.

Hospitals, Sanatoriums and Related Institutions

	Hospitals	Beds	Basinsets	Births	Patients Admitted	Average Census
Hospitals and sanatoriums	4,870	903,210	40,270	7,143,676	7,361,429	727,924
Related institutions	1,706	173,140	3,040	1,012,413	1,045,013	148,761
Total registered hospitals	6,576	1,076,350	43,310	8,156,089	8,406,442	876,685

abbreviations are explained at the head of the list. The list in each state is given in two sections: (1) hospitals and sanatoriums, and (2) related institutions. The related institutions include some general hospitals lacking certain essentials: nursing homes, school infirmaries, prison infirmaries, custodial and other institutions designed to give some medical, nursing or convalescent care in an ethical and acceptable manner but not

The good work that the American Medical Association has accomplished by its vigilance in distinguishing between the fit and the unfit in the hospital field has been shared very largely by other organizations. The American College of Surgeons has cooperated by refusing to consider for its approval an unregistered hospital, and the American Hospital Association has followed the Register in considering applications for institutional membership. It is evident also that the public in general limits its patronage and its donations to hospitals that are considered worthy of a place in the Register.

Opportunity is always open to unregistered hospitals to mend their ways and merit registration.

DEVELOPMENTS IN INTERN TRAINING

Two criticisms directed at the internship period have been subjected to pointed inquiry recently. These are (1) that, as now constituted, the internship period concentrates interest more particularly on the end results of disease rather than on early recognition and treatment, (2) that interns, since they are not in position to translate present experience in terms of future usefulness, are inclined to slight the commonplace in complaints and procedures and to waste time and effort in the pursuit of the unessential, the unusual or the spectacular.

Our knowledge of educational programs in general hospitals indicates that these indictments are too commonly true. It is equally true that most institutions lend themselves to teaching young medical graduates according to accepted standards only after the expenditure of considerable thought and effort. Much reliance has been placed on the personal initiative of interns to translate a mediocre internship into a well-rounded useful service. Such individual industry and application are admittedly indispensable factors in any good internship, but the criticisms mentioned lead one to believe that dependence on this factor is not enough.

Proper use of outpatient material answers the criticism relating to contact with early manifestations of disease and it is pointed out that affiliations are available in most communities for such experience. In this way, interns can observe and manage mental and communicable diseases and attend antepartum, pediatric, metabolic, venereal and other types of clinics. In several instances, use has been made of ambulatory patients in doctors' offices.

There has always been a considerable waste of the many opportunities for experience in commonplace procedures available in most hospitals. The Report of the Commission on Medical Education was largely responsible for focusing attention on the principal demands made on general practitioners. As a result, practical aspects of hospital service useful to practitioners are beginning to receive the attention they deserve. Commentators frequently have noted the ignorance of recent medical graduates in the simplest nursing procedures and the gratitude of the house staff after such demonstrations have been arranged. Similarly, instruction in the dietetic laboratory, pharmacy, physical therapy department and other hospital units has proved extremely useful. Greater emphasis on minor surgery, fractures, infant feeding, conservative obstetrics, anesthesia and the like has been discussed in previous hospital numbers of *THE JOURNAL*. Likewise, training of interns in nonclinical subjects, such as medical organization, economics, jurisprudence, insurance and compensation laws has been inaugurated in

many hospitals by development of seminars conducted by the interns themselves.

Hospitals in many instances attract interns through the merits of outstanding clinicians or services. Evidences of thoughtfully considered, complete internship programs are, however, no longer uncommon. In every such instance, progress in intern training in individual institutions is in direct proportion to the alertness of the staff intern committee.

AVAILABLE CLINICAL MATERIAL

The attention of hospitals has been called to the change in the Council's requirements covering available clinical material in hospitals seeking internship approval. This regulation now reads: "General hospitals are eligible which admit at least 2,000 patients per year and/or have a daily average census of seventy-five patients, and which provide a variety of medical, surgical, obstetric and pediatric patients either in the hospital proper or through suitable affiliations with other institutions. New-born infants are included in computing the daily average census but are not counted as admissions. Deviations from this rule are occasionally permitted by the Council but only on the basis of individual investigation. Allowances are occasionally made for additional sources of patients such as an active, organized outpatient department or affiliation with other special institutions."

A change of even greater significance has been the abandonment of the beds per intern ratio as a reliable index to diversification and availability of clinical material. A recent study indicates that a much more satisfactory index rests on the number of admissions per intern annually. It has been found that the best teaching hospitals employ one intern for each 430 yearly admissions, which means that each intern is responsible for a complete workup on slightly more than one admission daily. In the opposite sense it is thought that an intern cannot be expected to make adequate routine investigations on more than two patients a day, which places the maximum yearly admission rate per intern at about 700. Since the average length of stay in general hospitals is in the neighborhood of ten days and with the preceding ratios in mind, it follows that the total number of inpatients per day over which an intern should assume responsibility lies between the limits of ten and twenty.

If these ratios are accepted as adequate indexes, it can be foreseen that in time hospitals will, as a general rule, be expected to develop a program for at least four interns. If for any reason fewer are employed, special precautions would be necessary to prevent spreading intern effort over too wide a field.

It should also be borne in mind that logically these proportions should be applied to clinical material in each of the larger clinical departments—medicine, surgery, obstetrics and pediatrics. Preponderance of admissions in one department would not under this arrangement compensate for scarcity in another.

RESIDENCY APPROVAL

There is widespread interest at the present time in residency approval, a circumstance following closely on the development of special examining boards. It is hoped that the Council may secure assistance and cooperation from these boards in the further development of the hospital as an integral part of postgraduate training in medicine and in the elaboration of standards which will assist in the evaluation of hospital training in each of the residency classifications.

HOSPITALS REGISTERED BY THE AMERICAN MEDICAL ASSOCIATION

The following list contains the names of 6,246 hospitals, sanatoriums and related institutions that are located in the United States and 233 in Alaska, Canal Zone, Guam, Hawaii, Philippine Islands, Puerto Rico and Virgin Islands. It omits the names of 564 hospitals which, after investigation, were not accepted. The inclusion of the name of any institution may be taken as an indication that evidence concerning irregular or unsafe practices in that institution has not come to the attention of the Council on Medical Education and Hospitals. The list in each state is given in two sections: (1) hospitals and sanatoriums, and (2) related institutions. The related institutions include some general hospitals lacking certain essentials, nursing homes, school infirmaries, prison infirmaries, custodial and other institutions designed to give some medical, nursing or convalescent care in an ethical and acceptable manner, but not strictly hospitals. In the statistics the two classifications are consolidated. The words "No data supplied" following the name of a hospital mean that no report was received although at least three requests were sent.

KEY TO SYMBOLS AND ABBREVIATIONS

- * Approved for general internship the fifth year in medicine by the Council on Medical Education and Hospitals
- + Approved for certain residencies in specialties for graduates in medicine who have already had a general internship or its equivalent in private practice

- ◇ School of nursing accredited by state board of nurse examiners
- Affiliated for nurse training on state accredited basis

The column headed "Type of Service" tells what diseases or conditions are treated in each institution, as follows:

Ca	Cancer	ENT	Eye ear nose and throat	Inst	Institutional	Orth	Orthopedic
Card	Cardiac	Gen	General	Mat	Maternity	SKCa	Skin and cancer
Chil	Children	G&TB	General and tuberculosis	MatCh	Maternity and children	TB	Tuberculosis
Chr	Chronic	Inc	Incurable	MeDe	Mentally deficient	TbIs	Tuberculosis and isolation
Conv	Convalescence and rest	Indus	Industrial	Ment	Mental	TbOr	Tuberculosis and orthopedic
Drug	Drug and alcoholic	Iso	Isolation	N&M	Nervous and mental	Ven	Veneral
Epi	Epileptic						

The column headed "Control" indicates for each institution the ownership, control, or auspices under which it is conducted, as follows:

GOVERNMENTAL		NONPROFIT ORGANIZATIONS		PROPRIETARY	
Federal	State	Church	Individual	Individual	
Indian Affairs	City	Fraternal	Partnership	Partnership	
United States Army	County	Nonprofit association	Corporation	Corporation	
United States Navy	City County		(unrestricted as to profit)		
United States Public Health Service					
Veterans Administration Facility					

ABBREVIATIONS

CyCo	City and county	Frat	Fraternal	NPAsn	Nonprofit association
Corp	Corporation unrestricted as to profit	IA	Office of Indian Affairs Department of the Interior	Part	Partnership
Fed	Federal	Indiv	Individual	USPHS	United States Public Health Service
				Vet	Veterans Administration Facility

Population of cities is based on the 1930 census of the United States Bureau of the Census. Consultation with the Bureau led to this decision. Population of states is based on estimates of the Bureau as of July 1934.

The accompanying list was subject to additions and removals of hospitals until going to press. Totals of the list therefore may vary slightly from tables 1 and 2 which were prepared as of Dec 31 1935.

ALABAMA

ALABAMA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated	Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Libertyville 2716—Marshall	Gen	Indiv	24	2	12	4	208	
Sand Mountain Infirmary								
Alexander City 4419—Tallapoosa	Gen	Indiv	44	4	18	7	400	
Russell Hospital								
Anniston 2234—Calhoun	Gen	City	80	6	90	37	1341	
Garner Hospital	Gen	Army	120			47	1463	
Station Hospital								
Atmore 303—Escambia	Gen	Corp	24	2	16	5	225	
Atmore General Hospital								
Bellamy 317—Sumter	Gen	Indiv	16	2	3	3	133	
Bellamy Hospital								
Bessemer 20721—Jefferson	Gen	Corp	72	4	40	14	630	
Bessemer General Hospital								
Birmingham 29678—Jefferson	Gen	Church	175	12	190	60	2604	
Birmingham Baptist Hospital	Chil	NPAsn	50			28	855	
Children's Hospital	N&M	Indiv	50			31	288	
Hill Crest Sanitarium	Gen	County	429	45	2074	357	10221	
Hillman Hospital	TB	County	100			62	216	
Jefferson Sanatorium	Gen	NPAsn	210	16	150	78	3920	
Norwood Hospital	Gen	Church	113	12	180	75	3662	
St Vincent's Hospital	Gen	Corp	137	17	490	72	3804	
South Highlands Infirmary								
Clanton 1547—Chilton	Gen	NPAsn	25	2	10	11	332	
Central Alabama Hospital								
Decatur 150—Morgan	Gen	NPAsn	50	2	38	25	854	
Benevolent Society Hospital								
Dothan 16046—Houston	Gen	Indiv	60	6	33	37	2168	
Francisville Hospital	Gen	Indiv	94	6	55	62	2550	
Moody Hospital								
Enterprise 2702—Coffee	Gen	Indiv	30	2	15	4	295	
Gibson Hospital								
Lufkin 520—Barbour	Gen	Indiv	50	6	27	25		
Britt Infirmary	Gen	Indiv	50	8	74	23	754	
Salter Hospital								
Fairfield 11050—Jefferson	Gen	NPAsn	25	34	402	167	644	
Employees Hospital of the Tennessee Coal Iron and Railroad Company								
Flint (Decatur P O)—Morgan	Gen	NPAsn	25	34	402	167	644	
Morgan County Tuberculosis Sanatorium	TB	County	15			New		

Key to symbols and abbreviations is at top of this page

ARIZONA--Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Rate	Capacity	Business	Number of Births	Average Patients	Patients Admitted
Abbe 7 157—Gila									
Gila County Hospital	Gen	County	50	3	44	40	585		
Home 4 932—Yavapai									
United Verde Hospital	Gen	Corp	52	4	41	20	889		
Yams Canyon 36—Navajo									
Topi General Hospital	Gen	IA	36	4	35	50	883		
Logman 2 040—Mohave									
Mohave General Hospital	Gen	County	30	6	64	14	436		
App 58—Coconino									
Leupp Indian Hospital	Gen	IA	29	1	12	28	979		
South 3 711—Maricopa									
South Side District Hospital	Gen	NPA+sn	37	9	70	10	1 005		
Greenlee 6 175—Greenlee									
Phelps Dodge Hospital	Gen	NPA+sn	18	3	8	3	102		
Salinas 6 006—Santa Cruz									
St Joseph's Hospital	Gen	Church	16	3	27	7	240		
Deniv 48 118—Maricopa									
Arizona State Hospital	Gen	State	925			873	483		
Booker T Washington Memorial Hospital (col)	GATB	Indiv	20	8	50	5	81		
Good Samaritan Hospital	Gen	Church	10	18	40	73	3 048		
Phoenix Indian Hospital	Gen	IA	68	3	50	50	1 260		
Phoenix Indian Sanatorium	TB	IA	100			183	214		
Phoenix Sanatorium	TB	Indiv	80			10	282		
St Joseph's Hospital	Gen	Church	17	15	496	119	5 736		
St Luke's Home	TB	Church	75			22	60		
Scott 5 517—Yavapai									
Grey Hospital	Gen	Church	23	7	64	16	50		
Samuelson Sanatorium	TB	Indiv	30			12	50		
St Luke in the Mountains	Unit of St Luke's Home	Phoenix							
St Luke's Hospital									
St Luke's Hospital	Gen	Corp	20	4	16	8	206		
St Luke's Hospital									
Pima Indian Hospital	Gen	IA	38	6	64	3	817		
Stefford 1 706—Graham									
Storrie Squibb Hospital	Gen	NPA+sn	20	3	8	6	199		
St Carlos 100—Gila									
St Carlos Indian Hospital	Gen	IA	29	5	28	18	478		
St Elmo 61—Pima									
Indian Oasis Hospital	Gen	IA	50	10	03	42	556		
St Elmo 2 327—Pinal									
St Elmo Hospital	Gen	Corp	15	4	2	3	163		
St Elmo Hospital									
St Elmo Hospital	TB	State	110			87	230		
St Elmo Hospital	Gen	IA	45	6	16	30	1 008		
St Elmo Hospital									
St Elmo Hospital	TB	Part	20			16	25		
St Elmo Hospital	TB	Indiv	22			11	41		
St Elmo Hospital	Gen	NPA+sn	80			43	200		
St Elmo Hospital	TB	Church	30			20	38		
St Elmo Hospital	GATB	Church	100	10	179	106	2 646		
St Elmo Hospital	TB	IA	33			04	41		
St Elmo Hospital	GATB	Church	70	12	50	54	1 100		
St Elmo Hospital	TB	NPA+sn	82			40	3		
St Elmo Hospital	GATB	Vet	308			337	699		
St Elmo Hospital	GATB	Vet	600			300	1 303		
St Elmo Hospital	Gen	IA	46	4	20	39	1 066		
St Elmo Hospital	TB	IA	40			34			
St Elmo Hospital	Gen	IA	32	4	18	12	204		
St Elmo Hospital	Gen	County	50	6	0	data supplied			
Related Institutions									
St Elmo Hospital	Gen	IA	14	3	14	20	592		
St Elmo Hospital									
St Elmo Hospital	Gen	Indiv	17	4	21	9	340		
St Elmo Hospital	Gen	IA	52	4		44	080		
St Elmo Hospital	Indus	NPA+sn	9			1	52		
St Elmo Hospital									
Colorado River Indian Agency Hospital	Gen	IA	36	4	28	20	222		
St Elmo Hospital	Gen	Indiv	9			7	10		
St Elmo Hospital	Inst	Gen	County	78	6	00	641	343	
St Elmo Hospital	TB	Frat	26			14	0		
St Elmo Hospital	TB	NPA+sn	20			21	52		
St Elmo Hospital	Gen	County	30			4	8		
St Elmo Hospital	TB	County	40			40	112		
St Elmo Hospital	TB	Indiv	17			10	20		
St Elmo Hospital	Gen	IA	11			9	200		
St Elmo Hospital	Gen	Indiv	10	1	0	1	60		
Summary for Arizona									
Hospitals and Sanatoriums		Number	Beds			Average Patients	Patients Admitted		
Related institutions		48	4 240			3 017	37 106		
Total		62	4 691			3 312	40 000		
Refused registration		3	61						

Key to symbols and abbreviations is on page 798

ARKANSAS

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Bassinets	Number of Births	Average Patients	Patients Admitted
Alexander 141—Pulaski							
McRae Memorial Sanatorium (col)	1B	State	22			31	42
Arkadelphia 380—Clark							
Townsend Hospital	Gen	Indiv	16	4	14	4	138
Batesville 4484—Independence							
Dr Gray's Infirmary	Gen	Indiv	14		10	3	279
Johnston and Craig Hospital	Gen	Part	15	1	6	4	264
Pauline 2200—Saline							
Republic Mining and Manufacturing Company Hospital	Indus	NPA'ssn	20	1		4	
Benton 344—Saline							
Blakely's Sanatorium	Gen	Indiv	16	2	26	6	204
Blytheville 10095—Mississippi							
Blytheville Ho pital	Gen	City	4	8	No data supplied		
Camden 727—Ouachita							
Camden Hospital	Gen	NPA'ssn	25	10	123	9	489
Charleston 811—Franklin							
Bollinger Hospital	Gen	Indiv	15		15	2	9
Clarksville 501—Johnson							
Johnson County Hospital	Gen	Corp	18	1	5	5	170
Conway 554—Faulkner							
Faulkner County Hospital	Gen	Part	20	4	18	8	268
Crossville 2811—Ashley							
Crosett Hospital	Gen	Corp	25	6	79	15	365
Queen 25—Sevier							
Archer Hospital	Gen	Indiv	18	2	8	7	162
Dorado 16421—Union							
Henry C. Rosamond Memorial Ho pital	Gen	Part	25	10	70	12	752
Warner Brown Hospital	Gen	Church	75	6		1	
Fayetteville 7504—Washington							
Fayetteville City Hospital	Gen	City	45	6	101	21	1142
Veterans Admin Facility	Gen	Vet	255			197	2346
It Smith 31429—Sebastian							
St Edward's Mercy Hospital	Gen	Church	100	15	137	15	2278
Sparks Memorial Hospital	Gen	NPA'ssn	110	10	89	1	171
Helena 8716—Phillips							
Helena Hospital	Gen	NPA'ssn	55	6	74	16	661
Hope 6008—Hempstead							
Josephine Hospital	Gen	Indiv	25	3	25		24
Julia Carter Hospital	Gen	CyCo	20	4	26	8	360
Hot Springs National Park 20225—Garland							
Army and Navy General Hosp	Gen	Fed	915	2	10	352	2371
Leo A. Levi Memorial Hosp	Gen	Frat	70	5	6	61	704
Ozark Sanatorium	Gen	Corp	60	4	2	28	
St Joseph's Hospital	Gen	Church	150	6	51	72	1891
Ionesboro 10326—Craighead							
St Bernard's Hospital	Gen	Church	100	8	110	54	1923
Lake Village 1582—Chicot							
Lake Village Infirmary	Gen	Part	33	5	38	10	717
Little Rock 81675—Pulaski							
Arkansas Children's Home and Hospital	Chil	NPA'ssn	50			5	641
Baptist State Hospital	Gen	Church	300	15	25	80	2173
Granite Mountain Hospital	Gen	Indiv	20	2	20	5	182
Little Rock City Hospital	Gen	City	100	12	66	53	1612
Mount Pacific Hospital	Indus	NPA'ssn	125			59	1241
St Vincent's Infirmary	Gen	Church	115	15	305	86	3518
State Hospital	Ment	State	3826		16	704	2328
Monticello 5076—Drew							
Mack Wilson Hospital	Gen	NPA'ssn	0		22	8	450
Morrilton 4043—Conway							
St Anthony's Hospital	Gen	Church	16	2	12	10	262
North Little Rock 19418—Pulaski							
Veterans Admin Facility	Ment	Vet	820			871	315
Paragould 9066—Greene							
Dickson Memorial Sanatorium	Gen	Corp	25	3	12	6	150
Paris 554—Logan							
Dr Jewell's Infirmary	Gen	Indiv	18	2		5	
Pine Bluff 20760—Jefferson							
Davis Hospital	Gen	Church	50	6	73	19	892
Pre cotton 05—Nevada							
Corn Donnell Hospital	Gen	Indiv	38	2	52	18	516
Russellville 5625—Pope							
Russellville Ho pital	Gen	Indiv	55	6	48	35	1200
Searey 3387—White							
Wakenight Sanatorium	Gen	Indiv	2	1	14	10	578
Sloan Springs 2378—Benton							
Sloan Springs City Hospital	Gen	City	10	2		4	
State Sanatorium—Logan							
Arkansas Tuberculo sis Sanit	TB	State	50			23	949
Levanakana 10764—Miller							
Michael Meagher Memorial Hos pital	Gen	Church	50	10	72	40	1164
St Louis Southwestern Hosp	Indus	NPA'ssn	150			27	1202
Related Institutions							
Alexander 141—Pulaski	MeDe	Indiv	10				
Salaco Sanatorium School							
De Queen 2578—Sevier							
Childre Ho pital	Gen	Indiv	15	1		6	
It Smith 31429—Sebastian	In t	County	50			70	80
Sebastian County Hospital	Gen	County	50				
Hot Springs National Park 20225—Garland							
Camp Carraday Hospital	Gen	StaFed	60	6		New	
Woodman of Union Hospital (col)	Gen	Frat	20			No data supplied	
Little Rock 81675—Pulaski	In t	State	144			143	
Arkansas Confederate Home	In t	State	16			2	50
Arkansas School for the Blind	Mat	NPA'ssn	25	16	52	17	56
Florence Crittenton Home	Gen	County	200	6	56	175	950
Pulaski County Ho pital	Gen	County	200	6	56	175	950
United Friends Ho p (col)	Gen	Frat	2	1	2		

ARKANSAS—Continued

Related Institutions	Type of Service	Control	Beds, Rated Capacity	Bassinets	Number of Births	Average Patients	Patients Admitted
Magnolia 3008—Columbia							
Magnolia Sanatorium	Gen	Part	15		7	5	
Newport 4547—Jackson							
Dr Gray's Sanatorium	Gen	Indiv	8	2	6	3	115
Pine Bluff 20760—Jefferson							
United Links Hospital (col)	Gen	Indiv	1			No data supplied	
Rogers 3554—Benton							
Home Hospital	Gen	Indiv	8	2	11	2	85
Russellville 5628—Pope							
Haney Eye Ear Nose and Throat Hospital	1 N1	Indiv	10				109
Searey 3387—White							
Harrison Hospital	Gen	Indiv	12		10	5	70
Laylor 263—Columbia							
Bertie Lee Horn Sanatorium	Gen	Indiv	15			4	
Levanakana 10764—Miller							
Jamison Sanatorium (col)	Gen	Indiv	16	2		No data supplied	
Tucker 219—Jefferson							
Arkansas State Penitentiary Hospital	Inst	State	20			14	500
Summary for Arkansas							
Hospitals and sanatoriums			48	8290	652	4719	
Related institutions			17	653	463	415	
Totals			65	8943	7015	4691	
Refused registration			11	266			

CALIFORNIA

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Bassinets	Number of Births	Average Patients	Patients Admitted
Alhambra 316—Santa Clara							
Agnews State Hospital	Ment	State	160			550	55
Alhambra, 25—Madera							
Alhambra Tri County Tuberculo sis Sanatorium	TB	County	118			101	109
Alameda 3503—Alameda							
Alameda Sanatorium on the South Shore	Gen	Corp	85	22	191	24	1542
Alhambra 8569—Alameda							
Humboldt Hospital	Gen	Part	28	10	200	15	667
Alhambra 29472—Los Angeles							
Alhambra Hospital	Gen	Corp	50	12	154	25	521
Angel Island 406—Marin							
Station Hospital	Gen	Army	70			23	1168
Antioch 563—Contra Costa							
Antioch Hospital	Gen	Indiv	15	4	60	5	411
Aranta 1709—Humboldt							
Prinity Hospital	Gen	Church	20	4	32	5	500
Arlington 1550—Riverside							
Riverside County Hospital	G&TB	County	250	11	216	291	3654
Artesia 3891—Los Angeles							
Artesia Hospital	Gen	Indiv	20	4	85	11	458
Auberry 183—Fresno							
Wishiah Sanatorium	TB	County	66			50	77
Bakersfield 26015—Kern							
Bakersfield Emergency Hosp	Gen	Indiv	25	3		4	
Kern General Hospital	Gen	County	400	24	525	565	660
Mercy Hospital	Gen	Church	75	20	142	30	1745
San Joaquin Hospital	Gen	Corp	75	6	45	23	1065
Banning 2752—Riverside							
Banning Hospital and Sanat	G&TB	Indiv	25	1	12	4	68
Southern Sierras Sanatorium	TB	Indiv	5			19	47
Bell 7584—Los Angeles							
Bell Mission Ho pital	Gen	Corp	25	14	292		604
Belmont 684—San Mateo							
Alexander Sanatorium	N&M	Corp	50			27	64
California Sanatorium	TB	Corp	100			90	250
Twin Pines Sanatorium	N&M	Corp	20			18	40
Berkeley 82109—Alameda							
Alta Bates Hospital	Gen	Corp	100	6	40	54	255
Berkeley General Hospital	Gen	NPA'ssn	100	12	201	23	1111
E V Cowell Memorial Hosp	Gen	State	100			1	1714
Braxley 10439—Imperial							
Brawley Community Hospital	Gen	Indiv	15			8	
Burbank 16662—Los Angeles							
Burbank Hospital	Gen	Indiv	6	5	85	14	55
Calistoga 1000—Napa							
Silverado Sanatorium	TB	Indiv	60			36	5
Carmel 2260—Monterey							
Peninsula Community Hospital	Gen	NPA'ssn	25	7	71	13	623
Chico 7961—Butte							
Finloe Hospital	Gen	Indiv	2	6	105	15	846
Colfax 912—Placer							
Bushnell Sanatorium	Unit of Colfax School for the Tuberculo sis						
Colfax Hospital	Unit of Colfax School for the Tuberculo sis						
Colfax School for the Tuberculo sis	TB	Indiv	56			50	55
Hou ekeeping Cottage Colony	Unit of Colfax School for the Tuberculo sis						
Colusa 2116—Colusa							
Colusa Memorial Ho pital	Gen	County	25	8	59	14	463
Compton 1216—Los Angeles							
Compton Sanatorium	N&M	Corp	155			24	511
Las Campanas Ho pital	Gen	Corp	30	6	165	11	511
Covina 2774—Los Angeles							
Covina Hospital	Gen	Part	40	8	115	17	558
Crescent City 1720—Del Norte							
Knapp Hospital	Gen	NPA'ssn	16	5	25	6	270

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basins	Number of Births	Average Patients	Patients Admitted
Culver City 5669—Los Angeles University Hospital	Gen	Corp	50	17	51	8	290
Duarte 620—Los Angeles Los Angeles Sanatorium	TB	NPA's n	100			1.1	172
Dunsmuir 2610—Siskiyou Dunsmuir Hospital and Sanit	Gen	Corp	17	4	10	7	380
El Centro 8434—Imperial La Solana Hospital	Cen	Indiv	20	8	No data supplied		
El Monte 3479—Los Angeles Ruth Home	Mat	NPA's n	130	10	20	99	208
Eureka 15732—Humboldt General Hospital	Gen	Part	42	8	70	18	749
Humboldt County Hospital	Gen	County	312	10	162	260	1,000
Humboldt County School for the Tuberculous	TB	County	60		46	92	
St Joseph Hospital	Gen	Church	63	12	170	31	1,212
Ft Bidwell 462—Modoc Ft Bidwell Hospital	Gen	Corp	78	1	1	29	80
Ft Bragg 3022—Mendocino Redwood Coast Hospital	Gen	Corp	20		47	7	251
French Camp 248—San Joaquin San Joaquin General Hospital	Cen	County	100	24	64	100	7,889
Fresno 52513—Fresno Burnet Sanatorium	Cen	Corp	112	13	314	71	2,700
Fresno County General Hospital	Cen	County	300	20	100	40	6,400
St Agnes Hospital	Cen	Church	70	1	28	40	1,304
Fullerton 10860—Orange Fullerton Hospital	Gen	Church	20	7	4	8	252
Chloris 2502—Santa Clara Wheeler Hospital	Gen	NPA's n	28	7	57	9	112
Glendale 62136—Los Angeles Glendale Sanatorium and Hos	Cen	Church	20	24	2,0	124	2,772
Physicians and Surgeons Hosp	Gen	Corp	60	18	0	9	1,243
Crass Valley 3817—Nevada W C Jones Memorial Hosp	Gen	Corp	20	4	0	20	424
Hanford 7028—Kings Hanford Sanatorium	Cen	Corp	20	5	60	10	440
Kings County Hospital	Cen	County	100	11	92	11	994
Sacred Heart Hospital	Gen	Church	18	0	40	1	200
Hayward 5530—Alameda Hayward Hospital	Gen	Indiv	18	6	61	8	441
Healdsburg 2006—Sonoma Healdsburg General Hospital	Gen	Corp	14	0	3		219
Hollister 3757—San Benito Hazel Hawkins Memorial Hosp	Gen	NPA's n	10	4	1		97
Hoopa 20—Humboldt Hoopa Valley Indian Hospital	Cen	IA	6	0	20	16	370
Huntington Park 24391—Los Angeles Mission Hospital	Gen	Corp	51	10	28	20	1,060
Imola—Napa Napa State Hospital	Ment	State	346				886
Indio 157—Riverside Coachella Valley Hospital	Gen	Indiv	20	4	70	10	708
Inglewood 10480—Los Angeles Continencia Hospital	Cen	Indiv	24	10	14	14	340
Keene 164— Kern Stony Brook Retreat	TB	County	100			100	109
King City 1482—Monterey Community Hospital	Gen	Indiv	14	2	10	4	178
La Cresenta 1700—Los Angeles Hillcrest Sanatorium	TB	NPA's n	60			40	120
La Vina—Los Angeles La Vina Sanatorium	TB	NPA's n	10				88
Lindsay 2816—Tulare Lindsay Hospital	Gen	Indiv	10	2	30		259
Livermore 3110—Alameda Arroyo Sanatorium	TB	County	157			170	227
Livermore Sanatorium	NPA's n	County	114			80	148
St Paul's Hospital	Gen	Indiv	10	0	0		100
Veterans Admin Facility	G&TB	Vet	812			219	337
Lodi 6788—San Joaquin Dr Buchanan's Sanatorium	Cen	Indiv	10		40		268
Mason Hospital	Gen	Indiv	16		22	6	303
Loma Linda 200—San Bernardino Loma Linda Sanatorium and Hospital	Cen	Church	112	12	20	50	904
Long Beach 14062—Los Angeles Harrison Jones Clinic and Hospital	Gen	Indiv	42	6	40	1	610
Long Beach Community Hospital	Gen	NPA's n	100	20	371	68	245
St Mary's Long Beach Hospital	Gen	Church	20		110	20	770
Seaside Hospital	Gen	Corp	230	40	800	100	648
Los Angeles 12501—Los Angeles Harbor Sanatorium	TB	NPA's n	100			86	0
California Rattles Hospital	Chil	NPA's n	40	10	20	6	412
California Hopital	Chil	Church	20	28	72	190	649
Calvary of Lebanon Hopital	Cen	NPA's n	240	40	1,000	229	7,000
Children's Hopital	Chil	NPA's n	180			123	3,718
1st Patients Home of the Jewish Consumptive Relief Association	TB	NPA's n	0				
First and Far Hopital	F&T	Corp	10				210
French Hopital	Gen	NPA's n	50	30	14	21	70
Golden State Hospital	Gen	Indiv	0		1	1	70
Hollywood Hopital	Cen	Corp	210	60	70	14	704
Hospital of the Good Samaritan	Cen	Church	80	40	40	20	7,610
Japanese Hopital	Cen	Corp	30	6	8	19	931
Lincoln Hopital	Cen	NPA's n	20	8	14	12	60
Los Angeles County Hospital	Gen	County	3,220	144	947	2,500	49,000
Los Angeles County Psycho	Gen	Unit of Los Angeles County Ho					
Los Angeles Hopital	Gen	Indiv	35				10

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basins	Number of Births	Average Patients	Patients Admitted
Maternity Cottage	Mat	NPA's n	20	0	216	6	216
Methodist Hospital of Southern California	Cen	Church	137	40	722	79	3,482
Orthopaedic Hospital School	Orth	NPA's n	10			69	1,000
Pahl Hospital	Cen	Indiv	10		64	11	500
Queen of Angels Hospital	Gen	Church	188	37	608	171	5,788
St Vincent's Hospital	Gen	Church	200	50	488	118	4,111
Santa Fe Coast Lines Hosp	Indiv	NPA's n	100	8	150	18	1,996
Southwest General Hospital	Gen	Indiv	24	8	No data supplied		760
Terry Sanatorium Hospital	Cen	Corp	14		No data supplied		0
White Memorial Hospital	Cen	Church	102	18	201	50	4,400
Los Gatos 3168—Santa Clara Oak's Sanatorium	TB	Indiv	10			26	47
Madera 4660—Madera Madera County Hospital	Cen	County	0		84	7	771
Madera Sanatorium	Cen	Indiv	20		51	7	700
Manor—Marin Arcanupia Sanatorium	TB	NPA's n	40			41	120
March Field—Riverside Station Hospital	Gen	Army	90	4	74	40	408
Mare Island 416—Solano U S Naval Hospital	Cen	Naval	100			0	2,000
Martinez 6360—Contra Costa Contra Costa County Hospital	Cen	County	20	12	100	200	219
Martinez Community Hospital	Cen	Corp	30	6	80	12	700
Marysville 7033—Yuba Ridgmont Memorial Hospital	Cen	Indiv	26	9	62	12	677
McCloud 2600—Siskiyou McCloud Hospital	Cen	Corp	20	4	78	6	392
Merced 7060—Merced Mercy Hospital	Gen	Indiv	0	5	120	23	112
Modesto 1342—Stanislaus McPheters Hospital	Cen	Indiv	0	0	80	2	917
Robertson Hospital	Cen	Indiv	30	8	126	18	909
St Mary's Hospital	Cen	Church	21	8	114	11	1,200
Stanislaus County Hospital	Gen	County	909	17	107	190	2,800
Monrovia 10800—Los Angeles Norumbega Sanatorium	TB	Indiv	10			8	24
Pottenger Sanatorium and Clinic	TB	Corp	120			61	14
Monterey 9141—Monterey Monterey Hospital	Gen	NPA's n	100	0	44	1	517
Monterey Park 400—Los Angeles Garfield Hospital	Cen	Corp	60	2	40	41	1,000
Murphy 63—Calaveras Bret Harle Sanatorium	TB	County	180			174	172
Napa 647—Napa Victory Hospital	Cen	Corp	20	6		9	
National City 7301—San Diego Elwyn Hospital	Gen	Part	12			2	122
Paradise Valley Sanatorium and Hospital	Gen	Church	100	10	192	40	1,700
Newman 1061—Stanislaus Newman Hospital	Cen	Indiv	11	3	90	6	70
Norwalk 1017—Los Angeles Norwalk State Hospital	Ment	State	2,441			9,400	912
Oakland 24063—Alameda Alameda County Hospital	Cen	County	300	22	846	71	10,000
Children's Hospital of the East Bay	Chil	NPA's n	60			24	1,000
East Oakland Hospital	Gen	Corp	70	24	698	1	2,670
Peralta Hospital	Cen	Corp	143	0	700	93	4,460
Providence Hospital	Cen	Church	212	30	404	74	3,320
Samuel Merritt Hospital	Gen	NPA's n	100	18	471	110	4,012
Olive View—Los Angeles Olive View Sanatorium	TB	County	1,020			948	680
Orange 8060—Orange Orange County Hospital	Gen	County	211	1	285	249	2,782
St Joseph Hospital	Gen	Church	100	20	20	42	1,840
Onard 6233—Ventura St John's Hospital	Gen	Church	0	12	90	10	78
Pacifica 1012—Los Angeles Independent Order of Foresters California Tuberculosis Sanatorium	TB	Frat	100			70	70
Palo Alto 1360—Santa Clara Palo Alto Hospital	Gen	NPA's n	76	14	210	40	2,016
Veterans Admin Facility	Ment	Vet	1,000			992	230
Pasadena 7060—Los Angeles Las Encinas Sanatorium	Cen	Corp	82			67	2,000
Pasadena Hospital	Cen	NPA's n	180	24	209	91	2,700
St Luke's Hospital	Gen	Church	7	18	200	5	1,720
Woman's Hospital	Mat	NPA's n	14	14	200	6	200
Patton 210—San Bernardino Patton State Hospital	Ment	State	2,660			7,000	1,000
Pineville 2322—Idorado Placerville Sanatorium	Gen	Part	21	6	74	8	288
Pomona 20604—Los Angeles Pomona Valley Community Hospital	Gen	NPA's n	52	21	171	23	1,001
Portola 1012—Plumas Western Pacific Railway Hospital	Gen	NPA's n	30	5	60	20	407
Red Bluff 317—Tehama St Elizabeth's Mercy Hospital	Gen	Church	20	5	90	20	700
Tehama County Hospital	Cen	County	0	2	0	47	450
Redding 4188—Shasta St. Caroline Sanatorium	Gen	NPA's n	20			7	
Redwood City 8062—San Mateo Canyon Sanatorium	TB	Indiv	7			32	50
Ridgely Health Home	TB	CyCo	51			80	90
Richmond 9000—Contra Costa Richmond Cottage Hospital	Gen	Part	44	10	200	90	1,718
River Side 2060—Riverside Riverside Community Hospital	Gen	NPA's n	4	18	24	6	1,000
Sherman Institute Hospital	Gen	IA	5			6	10

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Rosemead 2717—Los Angeles	N&M	Indiv	12			7	49
Alhambra Sanatorium							
Ross 1355—Marin	Gen	Corp	62	8	103	39	929
Ross General Hospital							
Sacramento 9370—Sacramento	Gen	Corp	137	27	334	70	853
Mercy Hospital	Gen	Church	450	24	637	371	7270
Sacramento County Hospital*	Gen	NPAasn	200	30	664	132	6021
Sutter Hospital							
Salinas 10263—Monterey	Gen	Indiv	26	9		5	
Park Lane Hospital	Gen	Part	23	9	153	12	1825
Salinas Valley Hospital							
San Bernardino 37451—San Bernardino	Gen	Church	120	12	137	23	937
San Bernardino Hospital							
San Bernardino County Charity Hospital**	Gen	County	310	18	322	262	2901
San Diego 14793—San Diego	Gen	Indiv	16	9	136	7	212
Good Samaritan Hospital	Gen	Corp	75	18	202	26	1312
Hoffman Memorial Hospital	Gen	Church	260	40	1,127	183	8013
Mercy Hospital							
San Diego County General Hospital**	Gen	County	640	32	735	507	7853
Scripps Memorial Hospital	Gen	NPAasn	44	6	38	21	624
Scripps Metabolic Clinic	Metab	NPAasn	25			17	712
U S Naval Hospital	Gen	Navy	1000			610	7026
San Fernando 7567—Los Angeles	Gen	Part	12	5	20	6	212
San Fernando Hospital	Gen	Part	12	5	20	6	212
Veterans Admin Facility	TB	Vet	244			226	327
San Francisco 634394—San Francisco	Gen	NPAasn	70	10	46	20	471
Chinese Hospital	Gen	NPAasn	127	10	40	84	1629
Danto Sanatorium	Gen	NPAasn	220	20	208	120	3551
Franklin Hospital	Gen	Frat	220	9	213	179	3733
French Hospital	Gen	Part	30			14	940
Greens Eye Hospital	Gen	NPAasn	215	44	597	110	3690
Hospital for Children**	Gen	Army	600	10	120	434	4476
Letterman General Hospital*	Gen	Church	120	30	386	86	3417
Mary's Help Hospital**	Gen	NPAasn	163	26	382	104	3984
Mt Zion Hospital**	N&M	Corp	38			18	622
Park Sanitarium	Gen	Corp	300	65	568	158	6,013
St Elizabeth's Infant Hosp	MatChil	Church	20	16	30	9	45
St Francis Hospital	Gen	Corp	300	65	568	158	6,013
St Joseph's Hospital	Gen	Church	200	32	732	149	6,531
St Luke's Hospital**	Gen	Church	200	20	421	134	4864
St Mary's Hospital**	Gen	Church	280	40	694	176	7494
San Francisco Hospital**	Gen	CyCo	1393	50	662	966	11289
Shriners Hospital for Crip	Orth	Frat	60			60	334
pled Children**							
Southern Pacific General Hos	Indus	NPAasn	400			262	4167
pital*							
Stanford University Hospitals	Gen	NPAasn	298	26	018	221	8514
(Including Lane Hospital)**	Gen	Corp	60	12	83	41	3173
Sutter Hospital	Gen	USPHS	493			400	3765
U S Marine Hospital*	Gen	State	264	30	002	182	6376
University of California Hos	Gen	Vet	336			291	2274
pital**							
Veterans Admin Facility							
Sanitarium, 415—Napa	Gen	Church	140	6	76	68	1783
St Helena Sanitarium and	Gen	IA	30	3	20	20	266
Hospital*							
San Jacinto 1346—Riverside	Gen	Corp	30			29	97
Soboba Indian Hospital	Gen	Church	104	28	373	67	2826
San Jose 57601—Santa Clara	Gen	Corp	122	24	408	59	2589
Alum Rock Sanatorium	Gen	Corp	449	25	639	391	5204
O Connor Sanitarium	Gen	County	100			91	116
San Jose Hospital							
Santa Clara County Hosp **	TB	County					
Santa Clara County Sanat							
Santa Clara County Hos							
San Leandro 11455—Alameda	Gen	County	900			887	1660
Fairmont Hospital of Alameda	G&TB	County					
County**							
San Luis Obispo 8246—San Luis Obispo	Gen	Indiv	20	4	22		234
Mountain View Hospital	Gen	County	79	8	146	40	1631
San Luis Obispo General Hosp	Gen	Indiv	30	5	22	8	356
San Luis Sanitarium							
San Mateo 1344—San Mateo	Gen	County	192	10	142	142	2105
Community Hospital of San	Gen	Church	93	20	312	44	2200
Mateo County							
Mills Memorial Hospital	Gen	Corp	88	22	421	60	2012
San Pedro—Los Angeles	Gen	Army	31		2	29	937
San Pedro Hospital	Gen	Navy	367			111	1777
Station Hospital							
U S Ship Relief							
San Rafael 8022—Marin	Gen	Indiv	30	15	146	21	900
San Rafael Cottage Hospital	Gen	Army	25	4		10	413
Station Hospital							
Santa Barbara 33613—Santa Barbara	Gen	Church	80	10	108	52	1593
St Francis Hospital*	Gen	NPAasn	200	32	204	87	2083
Santa Barbara Cottage Hos	Gen	County	200	10	204	172	1887
pital*							
Santa Barbara General Hosp *							
Santa Cruz 14395—Santa Cruz	Gen	Indiv	31	10	37	10	462
Hanly Hospital	Gen	County	55	6	92	65	1012
Santa Cruz County Hospital	G&TB	Corp	35	6	100	10	610
Santa Cruz Ho pital							
Santa Monica 37146—Los Angeles	Gen	Corp	30	9	45	26	220
St Catherine's Hospital	Gen	Corp	94	12	401	60	3349
Santa Monica Hospital	Gen	Corp	31	10	125	12	400
Wiltshire Hospital							
Santa Ro 10636—Sonoma	Gen	Indiv	18	4	60	6	402
Fliza Tanner Hospital	Gen	Indiv	22	8	80	12	632
General Ho pital							
Scottia 2024—Humboldt	Gen	NPAasn	02	4	33	9	334
Scottia Ho pital							
Selma 3005—Fresno	Gen	Corp	14	3	76	7	622
Selma Sanitarium							

CALIFORNIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Sonora 2278—Tuolumne	Gen	Indiv	25	3	31	12	581
Sonora Hospital							
South Gate 19632—Los Angeles	Gen	NPAasn	40	20	336	15	616
Suburban Hospital							
South Pasadena 13730—Los Angeles	N&M	Indiv	100				90
Pasadena Sanitarium							
South San Francisco 6193—San Mateo	Gen	Corp	30	0	36	10	068
South San Francisco Hospital							
Spadra, 39—Los Angeles							
Pacific Colony—State Narcotic	McDeDrug	State	892			700	157
Hospital							
Springville—Tulare	Joint	County	101			80	118
Tulare Kings Counties							
Tuberculosis Hospital	TB	County	101			80	118
Stockton 47963—San Joaquin	Gen	Corp	77	12	206	39	1907
Dameron Hospital	Gen	Church	120	20	243	41	1563
St Joseph's Home and Hosp	Ment	State	3660			3690	1011
Stockton State Hospital							
Susanville 1358—Lassen	Gen	Indiv	35	5	53	6	433
Riverside Hospital							
Talmage 29—Mendocino	Ment	State	2700			2650	898
Mendocino State Hospital*							
Tehachapi 736—Kern	Gen	Part	15	3	31	6	931
Tehachapi Valley Hospital							
Torrance 2771—Los Angeles	Gen	NPAasn	38	12	169	10	025
Jared Sidney Torrance Memo	Gen	NPAasn	38	12	169	10	025
rial Hospital							
Trona 775—San Bernard no	Gen	Corp	10	1	21	3	070
Trona Hospital							
Tulare 6207—Tulare	Gen	Indiv	18	5	01	6	341
Bellevue Hospital	Gen	County	91	9	309	58	0110
Tulare County General Hosp	Gen	Indiv	16	3	40	7	211
Tulare Hospital							
Turlock, 4276—Stanislaus	Gen	Church	40	8	93	16	606
Emanuel Hospital	Gen	Indiv	15	8	20	6	064
Lillian Collins Hospital							
Ventura 11432—Ventura	Gen	NPAasn	65	12	75	20	1111
Foster Memorial Hospital	Gen	County	182	8	140	144	0099
Ventura County Hospital							
Vineburg 164—Sonoma	Gen	Indiv	10	2	30	2	400
Burndale Hospital							
Visalia 7263—Tulare	Gen	Corp	20	4	68	10	410
Kaweah Hospital							
Watsonville 8344—Santa Cruz	Gen	Indiv	23	5	136	13	013
Watsonville Hospital							
Weed 4227—Siskiyou	Gen	Indiv	24	4	38	7	307
Weed Hospital							
Welmar 32—Placer	TB	County	413			463	090
Weimar Joint Sanatorium							
West Los Angeles—Los Angeles	G&TB	Vet	1232			961	4401
Veterans Admin Facility							
Westwood 4062—Lassen	Gen	Indiv	30	9	102	10	300
Westwood Hospital							
Willits 1424—Mendocino	Gen	NPAasn	12	5	37	10	314
Frank R Howard Memorial							
Hospital							
Woodland 5542—Yolo	Gen	Corp	60	10	98	09	1003
Woodland Clinic Hospital							
Yosemite National Park 200—Mariposa	Gen	Indiv	13	2	14	0	000
Lewis Memorial Hospital							
Yreka 2126—Siskiyou	Gen	County	130	7	112	128	1301
Siskiyou County General Hosp							
Yuba City 3600—Sutter	Gen	Indiv	12	3	88	10	490
Yuba City General Hospital							

Related Institutions

Alentraz 171—San Francisco	Inst	Fed	30			8	100
U S Penitentiary Hospital							
Alta Loma 115—San Bernardino	TB	Indiv	25			10	13
Our Lady of Lourdes Sanat							
Alturas 2338—Modoc	Gen	County	18	1	9	11	002
Modoc County General Hosp							
Artesia 3891—Los Angeles	N&M	Indiv	21			No data supplied	
Dr Hansen's Sanitarium							
Auburn 2661—Placer	Gen	Part	20	4		No data supplied	
Highlands Sanitarium	Gen	County	130	5	48	112	090
Placer County Hospital							
Azusa 4808—Los Angeles	Conv	NPAasn	51			40	000
Rural Rest Home and Sanit							
Belmont 984—San Mateo	TB	NPAasn	20			17	000
Chas S Howard Foundation	N&M	Indiv	20			14	67
Reed Sanitarium							
Berdoo Camp—Riverside	Indus	NPAasn	20			18	000
Berdoo Hospital							
Berkeley 82109—Alameda	Inst	State	22			6	000
California State Schools for the							
Deaf and Blind							
Blythe 1020—Riverside	Gen	NPAasn	7	4	40	3	108
Frank Luke Memorial Hospital							
Chula Vista 3860—San Diego	Inst	NPAasn	40			No data supplied	
McNabb Hospital and Sanit							
Claremont 2719—Los Angeles	Inst	NPAasn	24			3	21
Claremont Colleges Infirmary							
Colusa 2116—Colusa	Inst	County	60	2	32	47	003
Colusa County Hospital							
Corona 7018—Riverside	Gen	Indiv	10	4	30	4	100
Ray T Williams Hospital							
Coronado 0475—San Diego	Gen	Indiv	12	5	08	0	079
Coronado Hospital							
Crescent City 1720—Del Norte	Gen	County	30	1	13	22	003
Del Norte County Hospital							
Decoto 519—Alameda	Inst	Frat	50			40	
Maconic Home Hospital							
Dinuba 2968—Tulare	Gen	Indiv	10	4		2	
Dinuba Ho pital							

CALIFORNIA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Eldridge 16—Sonoma	MeDe	State	2 619		2 345	426	
Sonoma State Home							
Lureka 15 752—Humboldt	Is	County	16	1	6	142	
Humboldt County Isolation Ho pital							
Fowler 1 171—Fresno	Gen	Indiv	6	3	25	3	209
Fowler Sanitarium							
Glendale 62 736—Los Angeles	N & M	Indiv	29		29	10	
Villa Shaw Rest Home							
Hermosa Beach, 4 796—Los Angeles	Gen	Corp	17	7	17	7	250
Hermosa Redondo Hospital							
Hollister 3 757—San Benito	Inst	County	50	2	3	37	51
San Benito County Hospital							
Hondo —Los Angeles							
Rancho Los Amigos Psychi atric Unit	Ment	County	502		550	263	
Inglewood 19 480—Los Angeles	N & M	Indiv	85		60	120	
St Erme Sanitarium							
Keene 161—Kern	TB	County	44		42	47	
Kern County Preventorium							
Kingsburg, 1 82—Fresno	Gen	Indiv	8	2	23	3	173
Kingsburg Sanitarium							
La Crescenta 1 510—Los Angeles	N & M	Part	24		10	43	
Kimball Sanitarium							
La Mesa 2 513—San Diego	TB	Indiv	20		2	19	
La Mesa Sanitarium							
Lincoln 2 041—Placer	N & M	Indiv	15		7	10	
Joslin's Sanatorium							
Livermore 3 119—Alameda	TB	County	65		84	174	
Del Valle Preventorium							
Lone Pine 360—Inyo	Gen	Indiv	7	4	19	3	124
Lone Pine Hospital							
Los Angeles 1 238 04—Los Angeles	N & M	Corp	18		No data supplied		
Bankila Sanitarium							
Chaco Diet Sanitarium	Conv	Indiv	22		11	144	
Doughty Sanitarium	TB	Indiv	12		10	33	
Florence Crittenton Home	Mat	NPA's'n	20	20	54	21	58
Junior League Convalescent Home for Children	Conv	NPA's'n	24		18	64	
Juvenile Hall Hospital	Gen	County	121		69	3 417	
Las Palmas Rest Home	Nerv	Indiv	10		8	11	
Los Angeles Smallpox Quarantine Hospital	Is	City	90		1	3	
Resthaven	N & M	NPA's'n	40		22	125	
St Barnabas Rest Home for Men	Conv	Church	14		10	82	
St Vincent's Maternity Home	Mat	NPA's'n	10	10	78	20	78
Salvation Army Women's Home and Hospital	Mat	Church	60	40	119	44	152
Los Banos 1 815—Merced	Gen	Indiv	14	4	28	6	300
Los Banos Hospital							
Loyalton 837—Sierra	Gen	Indiv	8	1	15	2	100
Sierra Valley Hospital							
Manteca 1 614—San Joaquin	Gen	Indiv	8	4	12	2	119
Manteca Hospital							
Marysville 5 763—Yuba	Gen	County	97	5	57	84	539
Yuba County Hospital							
Merced 7 065—Merced	Gen	County	2 011	21	256	2,718	
Merced General Hospital							
Maricopa 10 890—Los Angeles	TB	NPA's'n	90		81	72	
Canyon Preventorium	TB	Church	22		5	15	
Maryknoll Sanatorium	N & M	Indiv	41		41	14	
Mountain View Rest Home	N & M	Part	40		25	16	
Palm Grove Sanatorium							
Montebello 5 493—Los Angeles	Conv	NPA's'n	40		30	705	
Los Angeles Convalescent Home							
Mountain View 3 50—Santa Clara							
Mountain View Hospital and Sanitarium	Gen	Indiv	7		2	250	
Nevada City 1 701—Nevada	Gen	Indiv	10	7	89	4	290
Nevada City Sanitarium							
Nevada County Hospital	Gen	County	64	3	6	71	165
Oakland 2 4 063—Alameda	Conv	Indiv	20		16	150	
Fl Rep'o o Sanitarium							
Salvation Army Women's Home and Maternity Hospital	Mat	Church	63	35	125	51	169
Pacific Grove 1 55—Monterey	Gen	Indiv	12	4	43	6	225
Bayview Hospital							
Paadena 76 086—Los Angeles	Conv	NPA's'n	40		40	67	
11 Aldo Pasadena Preventorium							
Placerville 2 722—Idorado	Gen	County	60	2	3	45	88
Idorado County Hospital							
Porterville 1 063—Tulare	Gen	Indiv	8	2	18	1	62
Mt. Whitney Ho pital							
	Gen	Indiv	10	7	104	8	412
	Gen	County	82	7		31	
Repress 20—Sacramento							
Tolson Prison Hospital	Inst	State	76		No data supplied		
Rosemead 2 711—Los Angeles	N & M	Indiv	56		53	391	
Rosemead Lodge							
Ross 1 55—Marin	MeDe	Part	36		34	7	
The Cedars							
Salinas 10 763—Monterey	Gen	County	120	6	145	101	1 323
Monterey County Hospital							
San Andrea 75—Calaveras	Gen	Indiv	6	2	1	1	49
San Andrea Ho pital							
San Diego 147 00—San Diego	N & M	Indiv	4		5	57	
Carter Sanitarium	Conv	Indiv	22		17	29	
Hillcrest Home							
Lane Sanitarium	Conv	Indiv	0		6	5	
San Francisco 634 224—San Francisco	Inc	NPA's'n	75		35	77	
Arden Nursing Home	Conv	Corp	25		17	71	
Greer Home							

CALIFORNIA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Laguna Honda Home Infr mary	Inst	Co	700			700	1 011
San Francisco Polyclinic	Gen	NPA's'n	12			6	499
San Gabriel 7 224—Los Angeles	N & M	Part	75			65	59
Baldy View Sanitarium	N & M	Indiv	50			49	46
Mission Lodge Sanitarium							
San Jose, 57 651—Santa Clara	N & M	Indiv	9			6	13
Beale Convalescent Home	TB	County	47			35	71
Sunnyholme Preventorium							
San Mateo 13 444—San Mateo	TB	NPA's'n	25			25	29
San Mateo Preventorium							
San Quentin 325—Marin	Inst	State	250			125	1 701
Charles L. Mumiller Hospital							
San Rafael 8 022—Marin	TB	County	60			63	81
Marin County Tuberculosis Hospital							
Santa Barbara 33 618—Santa Barbara	CardCh	Indiv	12			12	6
La Loma Feliz							
Santa Monica 37 146—Los Angeles	Conv	Indiv	6			5	40
Santa Monica Diet Home							
Santa Rosa 10 036—Sonoma	Gen	County	140	10	140	14	1 255
Sonoma County Hospital							
Sonora 2 278—Tuolumne	Gen	County	23	4	39	26	479
Tuolumne County Hospital							
Stanford University 720—Santa Clara	Chil	NPA's'n	70			69	210
Stanford Convalescent Home							
Suisun City 90—Solano	Gen	Inst	County	110	6	65	76
Solano County Hospital							
Sunland —Los Angeles	TB	Corp	60			55	17
Sunland Sanatorium							
Tracy 3 829—San Joaquin	Gen	Indiv	10	2	50	4	2 0
West Side Hospital							
Ventura 11 432—Ventura	Inst	State	40				404
Ventura School for Girls							
Verdugo City 5 000—Los Angeles	N & M	Indiv	100			72	77
Rockhaven Sanitarium							
Veterans Home—Napa	Inst	State	246			140	671
Veterans Home Hospital							
Waterman—Amador	Inst	State	45			10	1 485
Preston School of Industry Hospital							
Weaverville 509—Trinity	Inst	County	30	3			
Trinity County Hospital							
Willows 2 024—Glenn	Gen	County	50	1	No data supplied		
Glenn County Hospital							
Wilmar 5 005—Los Angeles	N & M	NPA's'n	48			29	160
Jean G. McCracken Home							
Yuba City 3 605—Sutter	Gen	County	60	6	86	47	491
Sutter County Hospital							

Summary for California

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	276	53 637	44 798	456 617
Related institutions	102	10 658	9 157	30 820
Totals	378	64 295	53 955	487 437
Refused registration	69	2 311		

COLORADO

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Alamosa 5 107—Alamo	Gen	Church	20	5	24	13	687
Lutheran Hospital							
Aspen 705—Pitkin	Gen	Indiv	25	2	6	7	67
Citizens Hospital							
Boulder 11 223—Boulder	Gen	Church	101	6	53	75	1 022
Boulder Colorado Sanitarium and Hospital	Gen	NPA's'n	60	8	55	25	910
Community Hospital							
Brush 2 312—Morgan	Gen	Church	24	8		13	577
Eben Ezer Hospital							
Canon City, 5 958—Fremont	Gen	Indiv	26	5	32	13	500
Colorado Hospital							
Cheyenne Wells 505—Cheyenne	Gen	Indiv	10	3	15	4	201
Cheyenne County Hospital							
Colorado Springs 33 237—El Paso	Gen	Church	93	12	360	70	2 074
Beth El General Hospital							
Colorado Springs Psychopathic Hospital	N & M	Part	150			104	185
Cragmor Sanatorium	TB	Corp	130			No data supplied	
Crestone Heights Sanitarium and Hospital	Gen	Indiv	21	6	34	6	225
Glockner Sanatorium and Hospital	Gen	Church	150	13	129	110	1,512
National Methodist Episcopal Sanatorium for Tuberculosis and Sanatorium*	TB	Church	77			43	58
Sunnyrest Sanatorium	G & TB	Church	145	9	171	84	918
Union Printers Home and Tuberculosis Sanatorium*	TB	NPA's'n	56			21	24
Cortez 921—Montezuma	G & TB	NPA's'n	283			57	42
Johnson Hospital	Gen	Indiv	12	1	26	7	439
Cripple Creek 1 427—Teller	Gen	NPA's'n	24	6	21	12	292
Cripple Creek Hospital							
Del Norte 1 410—Rio Grande	Gen	Church	25	6	54	16	416
St. Joseph's Hospital and Sanatorium							

Key to symbols and abbreviations is on page 798

COLORADO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Delta 2 925—Delta	Gen	NPA'ssn	11	3	27	5	189
Western Slope Memorial Hosp	Gen	NPA'ssn	11	3	27	5	189
Denver 257 861—Denver	Gen	NPA'ssn	11	3	27	5	189
Bethesda Sanatorium	FB	Church	68			20	40
Beth Israel Hospital	Gen	NPA'ssn	5	10	49	28	963
Childrens Hospital*	Chil	NPA'ssn	240	38		114	3 047
Colorado General Hospital**	Gen	State	162	18	12	133	3 175
Colorado Psychopathic Hos- pital*	Ment	State	78			75	806
Denver General Hospital**	Gen	Cy Co	50	50	726	44	17 615
Ex Patients Tubercular Home	IB	NPA'ssn	80			48	21
Fitzsimons General Hospital*	C&TB	Army	1 18	8	50	514	5 227
Mersey Hospital*	Gen	Church	22	20	410	14	4 800
Mt Airy Sanitarium	N&M	Corp	60			40	491
National Jewish Hospital+	IB	NPA'ssn	200			241	193
Porter Sanitarium and Hosp	Gen	Church	100	20	189	41	1 061
Presbyterian Hospital*	Gen	Church	150	20	489	80	2 837
St Anthony's Hospital*	Gen	Church	182	50	491	90	2 692
St Joseph's Hospital*	Gen	Church	210	20	414	134	4 546
St Luke's Hospital*	Gen	Church	219	30	389	143	1 945
Sands House	IB	NPA'ssn	48			38	54
Steele Memorial Hospital	IB	Cy Co	50			48	1 160
Durango 5 400—LaPlata	Gen	Church	4	8	80	29	1 222
Mersey Hospital	Gen	Church	4	8	80	29	1 222
Idgewater 1 473—Jefferson	IB	NPA'ssn	1			49	30
Craig Colony	IB	NPA'ssn	1			49	30
Ingleswood 7 980—Arapahoe	IB	NPA'ssn	90			50	77
Swedish National Sanatorium	IB	NPA'ssn	90			50	77
Lairplay 221—Park	Gen	Part	14	2	1	9	36
St Logan 1 525—Arapahoe	Gen	Army	70			70	1 562
Station Hospital	Gen	Army	70			70	1 562
St Lyon 26—Bent	Gen	Army	70			70	1 562
Veterans Admin Facility	Ment	Vet	690			10	730
St Morgan 4 423—Morgan	Gen	Indiv	20	6	60	10	474
St Morgan Hospital	Gen	Indiv	20	6	60	10	474
Clenwood Springs 1 825—Girfield	Gen	Indiv	10	3	22	8	400
Dr Porter's Hospital	Gen	Indiv	10	3	22	8	400
Grand Junction 10 247—Mesa	Gen	Church	6	12	76	7	1 040
St Mary's Hospital*	Gen	Church	6	12	76	7	1 040
Greeley 12 203—Weld	Gen	County	88	12	27	6	2 399
Greeley Hospital	Gen	County	88	12	27	6	2 399
Hawthorn 1 027—Phillips	Gen	Part	18	6	56	10	644
McKnight Hospital	Gen	Part	18	6	56	10	644
Hayden 534—Routt	Gen	NPA'ssn	12	4	18	3	126
Solandt Memorial Hospital	Gen	NPA'ssn	12	4	18	3	126
Holyoke 1 226—Phillips	Gen	Indiv	10	2	11	6	214
Holyoke Hospital	Gen	Indiv	10	2	11	6	214
Ignacio 464—LaPlata	Gen	IA	75	4	12	26	708
Edward T Taylor Hospital	Gen	IA	75	4	12	26	708
LaJunta 7 193—Otero	Indus	NPA'ssn	36			19	518
A T & S Railroad Hosp	Indus	NPA'ssn	36			19	518
Mennonite Hospital and San- itarium	G&IB	Church	70	10	109	38	912
Lamar 4 233—Prowers	Gen	Corp	70	5	42	30	718
Charles Maxwell Hospital	Gen	Corp	70	5	42	30	718
Leadville 3 771—Lake	Gen	Church	26	5	16	12	327
St Vincent Hospital	Gen	Church	26	5	16	12	327
Longmont 6 029—Boulder	Gen	Indiv	22	7	44	14	567
Longmont Hospital	Gen	Indiv	22	7	44	14	567
Montrose 5 566—Montrose	Gen	Indiv	12	3	30	6	300
Montrose Hospital	Gen	Indiv	12	3	30	6	300
St Luke's Hospital	Gen	Indiv	12	3	30	6	300
Oak Creek 1 211—Routt	Gen	Indiv	10	3	10	5	406
Oak Creek Hospital	Gen	Indiv	10	3	10	5	406
Red Cross Hospital	Gen	Indiv	10	2	7	4	144
Ouray 707—Ouray	Gen	Indiv	20	3	7	6	428
Bates Hospital and Sanitarium	Gen	Indiv	20	3	7	6	428
Pueblo 50 090—Pueblo	Gen	State	3 322			3 182	631
Colorado State Hospital	Gen	State	3 322			3 182	631
Corwin Hospital	Gen	NPA'ssn	219	16	183	80	2 004
Parkview Hospital	Gen	NPA'ssn	96	8	124	53	1 109
St Mary Hospital*	Gen	Church	162	12	191	75	2 440
Woodcroft Hospital	N&M	Corp	100			68	168
Rocky Ford 3 476—Otero	Gen	NPA'ssn	10	3	67	8	485
Physicians Hospital	Gen	NPA'ssn	10	3	67	8	485
Salida 5 065—Chaffee	Gen	NPA'ssn	78	6	28	37	1 119
Denver and Rio Grande West- ern Railroad Hospital	Gen	NPA'ssn	40	2	10	16	421
Red Cross Hospital	Gen	Corp	40	2	10	16	421
Spivak 400—Jefferson	Gen	Corp	40	2	10	16	421
Sanatorium of the Jewish Con- sumptives Relief Society+	TB	NPA'ssn	300			104	140
Steamboat Springs 1 198—Routt	Gen	Indiv	10	4		2	
Steamboat Springs Hospital	Gen	Indiv	10	4		2	
Sterling 7 195—Logan	Gen	Church	30	6	67	13	591
St Benedict Hospital	Gen	Church	30	6	67	13	591
Lowaco 60—Montezuma	Gen	IA	24	4	10	12	289
Ute Mountain Indian Hospital	Gen	IA	24	4	10	12	289
Trinidad 11 732—Las Animas	Gen	Church	80	12	120	48	1 226
St San Rafael Hospital	Gen	Church	80	12	120	48	1 226
Walenburg 500—Huerfano	Gen	Part	20	3	11	7	44
Lamme Brothers Hospital	Gen	Part	20	3	11	7	44
Wheat Ridge 1 630—Jefferson	TB	Church	12			53	44
Evangelical Lutheran Sanit-	TB	Church	12			53	44
Woodmen 400—El Paso	TB	Church	12			53	44
Modern Woodmen of America Sanatorium	TB	Frat	200			10	1 5

Related Institutions

Boulder 11 223—Boulder	Gen	County	40	6	56	75	50
Boulder County Hospital	IB	Indiv	70			17	19
Mesa Vista Sanatorium	Gen	Indiv	5	2	17		26
Furlington 1 250—Kit Carson	Gen	Indiv	5	2	17		26
Burlington Hospital	Gen	Indiv	5	2	17		26

COLORADO—Continued

Related Institutions	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Canon City 5 938—Tremont	Gen	State	40			26	1 044
Colorado State Penitentiary	Inst	State	40			26	1 044
Collbran 341—Mesa	Gen	Church	8	4	11	7	148
Plateau Valley Congregation	TB	Frd	50			0	140
Colorado Springs 30 237—El Paso	Gen	Church	8	4	11	7	148
Black Forest Sanitarium	TB	Frd	50			0	140
Myron Stratton Home and	Inst	NPA'ssn	16			16	50
Denver 287 861—Denver	Gen	NPA'ssn	16			16	50
Costello Home	TB	Frd	16			10	50
Oakes Home Sanitarium	TB	Church	100			30	190
St Francis Sanatorium	FB	Church	14			9	53
Salvation Army Woman's Home	Mat	Church	75	19	71	70	174
Ingleswood 7 980—Arapahoe	TBConv	Indiv	1			0	75
Lemp Sanatorium	TBConv	Indiv	1			0	75
Lafayette 1 000—Mesa	Gen	Indiv	8	2	5	2	106
Lafayette Community Hospital	Gen	Indiv	8	2	5	2	106
Colden 2 492—Jefferson	Inst	State	22			6	439
Hospital—State Industrial School	Inst	State	22			6	439
Grand Junction 10 247—Mesa	MeDe	State	500			50	91
State Home and Training School	MeDe	State	500			50	91
for Mental Defectives	MeDe	State	500			50	91
Creeley 12 203—Weld	Inst	Iso County	16			6	157
Island Grove County Hosp	Inst	Iso County	16			6	157
Homelake 225—Rio Grande	Inst	Iso County	16			6	157
Colorado State Soldiers and	Inst	Iso County	16			6	157
Sailors Home	Inst	Iso County	16			6	157
Iris Annus 2 477—Bent	Gen	Indiv	10	3	10	2	98
Blackwell Hospital	Gen	Indiv	10	3	10	2	98
Longmont 6 029—Boulder	Gen	Indiv	12	4	20	5	204
St Vrain Hospital	Gen	Indiv	12	4	20	5	204
Loveland 506—Farrimer	Gen	Part	10	4	23	5	277
Loveland Hospital and Clinic	Gen	Part	10	4	23	5	277
Yamaqua Hospital	Gen	NPA'ssn	14	4	10	5	160
Monte Vista 2 610—Rio Grande	Gen	Part	12	4	29	6	958
Monte Vista Hospital	Gen	Part	12	4	29	6	958
Ridge 207—Jefferson	MeDe	State	200			196	10
State Home and Training	MeDe	State	200			196	10
School for Mental Defectives	MeDe	State	200			196	10
Selbert 2 433—Kit Carson	Gen	Indiv	6	2	2	2	90
Selbert Hospital	Gen	Indiv	6	2	2	2	90
Windsor 1 825—Weld	Gen	Indiv	7	2	8	2	10
Bartz Memorial Hospital	Gen	Indiv	7	2	8	2	10
Yuma 1 660—Yuma	Gen	Church	9	3	22	6	150
Lutheran Deaconess Hospital	Gen	Church	9	3	22	6	150

Summary for Colorado

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	78	11 933	9 638	85 000
Related institutions	27	1 077	812	4 649
Total	105	13 010	10 450	89 649
Refused registration	72	411		

CONNECTICUT

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Bridgeport 146 716—Fairfield	Gen	NPA'ssn	376	74	1 414	314	9 050
Bridgeport Hospital*	IB	City	100			50	613
Ingleswood Hospital	Gen	Church	227	30	700	189	4 900
St Vincent's Hospital*	Gen	Church	227	30	700	189	4 900
Bristol 28 451—Hartford	Gen	NPA'ssn	84	21	261	67	2 361
Bristol Hospital	Gen	NPA'ssn	84	21	261	67	2 361
Canaan 500—Litchfield	Gen	NPA'ssn	24	6	64	6	303
Robert C Geer Memorial Hosp	Gen	NPA'ssn	24	6	64	6	303
Cromwell 2 814—Middlesex	Gen	Corp	33			16	18
Cromwell Hall	Gen	Corp	33			16	18
Danbury 22 261—Fairfield	Gen	NPA'ssn	112	20	361	74	9 051
Danbury Hospital*	Gen	NPA'ssn	112	20	361	74	9 051
Derby 10 788—New Haven	Gen	NPA'ssn	82	19	226	58	1 599
Griffin Hospital	Gen	NPA'ssn	82	19	226	58	1 599
Greens Farms 200—Fairfield	Gen	NPA'ssn	82	19	226	58	1 599
Hill Brook Sanitarium	N&M	Corp	80			66	160
Greenwich 5081—Fairfield	N&M	Corp	66			81	101
Blythehood	Gen	NPA'ssn	101	24	301	81	9 631
Greenwich Hospital	Gen	NPA'ssn	101	24	301	81	9 631
Hartford 164 002—Hartford	TB	State	287			216	220
Cedarcrest Sanatorium	Gen	NPA'ssn	711	69	1 867	500	19 566
Hartford Hospital*	Gen	NPA'ssn	65	10	170	48	1 453
Vit Sinal Hospital	Gen	NPA'ssn	65	10	170	48	1 453
Municipal Hospital*	GenIs	City	300	28	351	216	5 009
Neuro Psychiatric Institute of	N&M	NPA'ssn	200			238	4
the Hartford Retreat*	Gen	NPA'ssn	400	70	1 120	201	7 920
St Francis Hospital*	IB	NPA'ssn	50			32	5
Wildwood Sanatorium	Gen	NPA'ssn	50			32	5
Manchester 5 700—Hartford	Gen	NPA'ssn	50	11	24	50	1 667
Manchester Memorial Hospital	Gen	NPA'ssn	50	11	24	50	1 667
Meriden 28 451—New Haven	Gen	NPA'ssn	118	18	47	86	2 177
Meriden Hospital*	Gen	NPA'ssn	118	18	47	86	2 177
Underhill Meriden State Tu- berculosis Sanatorium*	TB	State	202			224	1 13
Middletown 24 004—Middlesex	Ment	State	3 164			3 000	8 6
Connecticut State Hospital*	Gen	NPA'ssn	150	20	400	104	2 918
Middlesex Hospital*	Gen	NPA'ssn	150	20	400	104	2 918

CONNECTICUT—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Milford 12 660—New Haven	Gen	NPA's n	50	1	82	20	73
Milford Hospital							
New Britain 68 128—Hartford	Gen	NPA's n	20	40	7.6	17	384
New Britain General Ho p							
New Haven 167 600—New Haven	Gen	Indiv	7	4	8	3	76
Dr J H Evans Private Ho p							
Grace Ho pital	Gen	NPA's n	227	40	787	183	6 594
Hospital of St Raphael	Gen	Church	232	28	721	183	4 803
New Haven Hospital	Gen	NPA's n	463	42	748	34	7 905
Newington 45 2—Hartford							
Newington Home for Crippled Children	Orth	NPA's n	100			194	11
Veterans Admin Facility	Cen	Vol	2.6			224	1 80
New London 29 640—New London	Gen	NPA's n	4	12	141	71	49
Home Memorial Ho pital							
Lawrence and Memorial Asso	Gen	NPA's n	198	6	07	12	2 831
ciated Hospitals	Sur	Indiv	26			16	78
Dr Jena's Surgical Hospital							
New Milford 4 700—Litchfield	Gen	NPA's n	30	10	12	13	308
New Milford Hospital							
Newtown 482—Fairfield	Gen	NPA's n	300			481	660
Fairfield State Hospital							
Norwalk 36 010—Fairfield	Gen	NPA's n	142	2	530	90	2 991
Norwalk General Hospital							
Norwich 2, 021—New London	Gen	NPA's n	3 103			2 869	1 906
Norwich State Hospital							
Norwich State Tuberculo s Sanatorium (Uncus on Thames)	TB	State	404			298	32
William W Backus Ho pital	Cen	NPA's n	12	2	38	76	2 963
Putnam 7 318—Windham	Gen	NPA's n	76	10	168	54	1 410
Day Kimball Hospital							
Rockville 7 440—Tolland	Gen	NPA's n	7	10	86	14	267
Rockville City Hospital							
Sharon 1 710—Litchfield	Gen	NPA's n	40	12	144	17	670
Sharon Hospital							
Shelton 19 117—Fairfield	Gen	NPA's n	30			708	2 8
Laurel Heights State Tubercu losis Sanatorium							
South Norwalk 8 908—Fairfield	N&M	Indiv	30			16	20
Dr Wadsworth's Sanatorium							
Stafford Spring 3 492—Tolland	Gen	NPA's n	3	12	1.1	2	501
Cyril and Julia C Johnson Memorial Hospital							
Stamford 46 346—Fairfield	N&M	Corp	60			17	103
Dr Barnes Sanatorium							
Stamford Hall	N&M	Corp	200			17	177
Stamford Hospital	Cen	NPA's n	274	4	602	12	3 994
Topham's Grange	N&M	Corp	25			11	18
Unionville 8 020—Hartford	N&M	Corp	70			6	
Thimcroft—Dr Vail's Sanat							
Torrington 20 040—Litchfield	Gen	NPA's n	170	20	34	69	1 908
Charlotte Hungerford Ho pital							
Wallingford 11 110—New Haven	TB	NPA's n	144			142	199
Gaylord Farm Sanatorium							
Waterbury 99 900—New Haven	Gen	Church	220	44	849	187	7 92
St Mary's Hospital	Gen	NPA's n	791	36	704	174	4 692
Waterbury Hospital							
Waterford 4 742—New London	TB	State	17			101	39
The Seaside							
West Haven 2, 808—New Haven	FB	NPA's n	60			40	14
William Wirt Winchester Ho p							
Westport 6 077—Fairfield	N&M	Corp	100			64	1.2
Westport Sanatorium							
Williamantic 17 102—Windham	Gen	NPA's n	19	12	190	42	1 364
Windham Community Memorial Hospital							
Winsted 7 88—Litchfield	Cen	NPA's n	14	11	170	30	997
Litchfield County Hospital							
Related Institutions							
Bridgeport 140 710—Fairfield	C&N	City	2 0			26	1 60
Hillside Home and Hospital							
Cheshire 96—New Haven	In t	State	9			6	100
Connecticut Reformatory							
1 ex 777—Middle ex	Cons	Indiv	20			10	27
Pettipiece Lodge and Sanit							
Greenwich 91—Fairfield	Cons	Indiv	1			5	3
Dr Bowman's Sanatorium							
Crest View Sanatorium	N&M	Corp	22			1	8
Municipal Hospital	Thie	City	61			70	190
Hamden 7 000—New Haven	In t	NPA's n	34			20	264
Children's Community Center of the New Haven Orphan Asylum							
Man field Depot 96—Tolland	McDe	State	1 900			1 184	46
Man field State Training School and Hospital							
Meriden 3 481—New Haven	In t	State	28			8	840
Connecticut School for Boys							
Middletown 4 4—Middle ex	In t	State	21			11	71
Long Lane Farm							
New Canaan 900—Fairfield	N&M	Corp	1			10	120
Shirer Hill							
New Haven 10 000—New Haven	In t	NPA's n	11			91	2
Twelfth Home for the Aged	In t	NPA's n	0			10	6.2
Strickland Home and Ho pital							
Yale Infirmary							
Nanticoke 100—New London	In t	State	60	70	6	69	184
Connecticut State Farm for Women							
Noroton Height 700—Fairfield	In t	State	14			112	1 20
So her Ho pital							

Key to symbols and abbreviations is on page 798

CONNECTICUT—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Springdale 663—Fairfield	Conv	Indiv	24			24	19
Nestledown Home							
Stratford 19 912—Fairfield	Conv	Indiv	10			10	88
Sunnyside Sanatorium							
West Hartford 24 911—Hartford	Mit	Church	11	12	64	2	80
St Agnes Home							
West Haven 20 808—New Haven	Conv	Indiv	7			7	7
West Haven Convalescent Home							
Wethersfield 7 312—Hartford	Inst	State	4			1	274
Connecticut State Prison Hosp							
Woodmont 31—New Haven	Conv	Corp	18				
Woodmont Hill							
Summary for Connecticut							
Hospital and sanatorium	60	1, 660	1, 0 2			120 509	
Related institutions	22	2 210	1 981			6 007	
Total	82	37 884	1, 010			126 516	
Refused registration	2	1					

DELAWARE

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Dover 4 800—Kent	Gen	NPA's n	41	8	111	23	906
Kent General Hospital							
Farmhurst 322—New Castle	Ment	State	10 2			997	300
Delaware State Ho pital							
Ft Dupont (Delaware City I O)—New Castle	Cen	Arms	28			7	221
Station Hospital							
Lewes 1 023—Sus ex	Cen	Corp	7	7	37	26	720
Beebe Hospital							
Marshallton 630—New Castle	TB	State	1 0			112	61
Brandywine Sanatorium	II	State	40			30	30
Edgewood Sanatorium (col)							
Milford 3 719—Sus ex	Gen	NPA's n	42	6	37	27	959
Milford Emergency Hospital							
Wilmington 106 97—New Castle	Gen	NPA's n	189	24	489	132	4 286
Delaware Hospital							
Homeopathic Hospital	Gen	NPA's n	16	70	77	119	97
St Francis Hospital	Cen	Church	7	1	240	48	1 644
Wilmington General Hospital	Gen	NPA's n	8	18	401	74	2 314
Related Institutions							
Mar hallton 600—New Castle	FB	NPA's n	92			20	0
Sunnybrook Cottage							
Stockley 138—Sus ex	McDe	State	49			300	71
Delaware Colony							
Wilmington 106 97—New Castle	Gen	Corp	16	6	25	6	308
Cross Private Ho pital							
Summary for Delaware							
Hospitals and sanatorium	11	1 974	1 94			1, 912	
Related institution	2	418	366			410	
Totals	14	2 342	1 960			1, 722	
Refused registration	0						

DISTRICT OF COLUMBIA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Washington 4 650	Gen	Indiv	1	4	10	9	29
Carson's Private Ho p (col)							
Central Dispensary and Emer	Gen	NPA's n	20			222	7 722
gency Hospital							
Ches's Chase Sanatorium	N&M	Indiv	10			18	37
Children's Hospital	Child	NPA's n	200			141	4 763
Children's Tuberculosis Sanat							
(Glen Dale Md P O)	IB	City	147			114	146
Columbia Hospital for Women and Lying In Asylum	Mat	NPA's n	197	81	1 840	36	3 389
District of Columbia Reforma tory Ho pital	Inst	City	50			16	760
Eastern Dispensary and Cas ualty Hospital	Gen	NPA's n	1 0	20	2	40	2 068
Epi copal Eye Ear and Throat Hospital	Gen	Church	100			72	6 526
Freedmen's Hospital (col)	Gen	Fed	322	54	709	2 3	5 0 4
Gallinger Municipal Ho p	Gen	City	1 130	86	1 781	761	10 662
Garfield Memorial Ho pital	Gen	NPA's n	268	47	807	191	5 894
Georgetown University Hosp	Gen	NPA's n	210	51	537	130	4 773
George Washington University Ho pital							
National Homeopathic Hosp	Gen	NPA's n	97	19	450	84	2 424
Providence Hospital	Gen	NPA's n	60	20	272	4	1 147
St Elizabeth's Ho pital	Gen	Church	211	30	490	147	4 470
St Elizabeth's Ho pital	Gen	Fed	446	4	2	300	1 499
Shirley Memorial Ho pital	Ment	Fed	44			5,202	844
Shirley Memorial Ho pital	Gen	Church	200	70	1 773	200	6 309
Tuberculosis Ho pital	TB	City	200			172	2 1

DISTRICT OF COLUMBIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
U S Naval Hospital	Gen	Navy	328			174	1 548
Veterans Admin Facility	Gen	Vet	340			322	2 717
Walter Reed General Hospital*	Gen	Army	1 243	13	183	978	7 984
Washington Sanitarium and Hospital*	Gen	Church	170	12	270	110	2 135
Related Institutions							
Washington 466 569							
Children's Summer Health Camp	TB	NPA'ssn	150		No data supplied		
District Training School (Laurel Md P O)	MeDe	City	516			498	63
Florence Crittenton Home	Mat	NPA'ssn	10	10	44	3	93
Home for the Aged and Infirm	Inst	City	141			80	168
Kendall House Sanitarium	Conv	Indiv	22			12	76
National Training School for Boys Hospital	Inst	Fed	30			13	1 092
U S Soldiers Home Hospital	Gen	Army	500			279	1 020
Washington Home for Incurables	Inst	NPA'ssn	160			160	106
Summary for Dist of Columbia							
		Number	Beds		Average Patients		Patients Admitted
Hospitals and sanatoriums		24	11 790		9 894		88 630
Related institutions		8	1 473		1 110		3 268
Totals		32	13 268		11 004		91 898
Refused registration		0					

FLORIDA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Arcadia 4 082—De Soto	Gen	NPA'ssn	20	3	No data supplied		
Arcadia General Hospital	Gen	Indiv	21	4	40	9	560
Bartow 5 269—Polk	Gen	County	06	0	76	51	989
Bartow General Hospital	Gen	Vet	197			179	1 897
Polk County Hospital	Gen	Indiv	10	5	24	7	259
Bay Pines—Pinellas	Gen	Part	30	4	21	12	541
Veterans Admin Facility	Gen	State	4 170			3 912	690
Bradenton 5 906—Manatee	Gen	NPA'ssn	35	10	83	12	478
Bradenton General Hospital	Gen	Corp	30	12	116	15	730
Century 1 525—Escambia	Gen	County	12	2	11	5	190
Turberville Hospital	Gen	NPA'ssn	125			28	883
Chattahoochee 450—Gadsden	Gen	NPA'ssn	18	3	4	7	180
Florida State Hospital	Gen	NPA'ssn	26	11	41	4	433
Clearwater 7 607—Pinellas	Gen	Army	00			30	928
Morton F Plant Hospital	Gen	Corp	30	7	112	13	815
Coral Gables 5 697—Dade	Gen	NPA'ssn	20	4	46	15	720
University Hospital	Gen	County	60	10	121	27	913
Dade City 1 811—Pasco	Gen	Church	60	10	140	20	664
Jackson Memorial Hospital	Gen	County	180	10	287	167	3 331
Daytona Beach 16 598—Volusia	Gen	N&M	12			7	49
Halifax District Hospital	Gen	NPA'ssn	40	6	48	27	960
Halifax District Hospital (Colored Annex)	Gen	NPA'ssn	103	22	361	78	2 028
De Land 5 246—Volusia	Gen	Church	200	40	728	89	3 074
De Land Memorial Hospital	Gen	USPHS	60			44	414
Ft Barrancas 30—Escambia	Gen	Corp	10	5	23	7	366
Station Hospital	Gen	Vet	300			269	1 622
Ft Lauderdale 8 666—Broward	Gen	City	81	16	93	29	1 101
Memorial Hospital	Gen	NPA'ssn	20	6	22	5	166
Ft Myers 9 082—Lee	Gen	Indiv	20	4	20	6	400
Leo Memorial Hospital	Gen	Indiv	12	2	7	4	202
Gainesville 10 465—Alachua	Gen	NPA'ssn	15	2	10	10	187
Alachua County Hospital	Gen	County	120	12	126	67	2 126
Jacksonville 129 549—Duval	Gen	City	320	30	627	266	9 202
Brewster Hospital (col)*	Gen	N&M	50	9	96	14	680
Duval County Hospital*	Gen	Corp	70	10	300	30	1 660
Dr Randolph's Sanitarium	Gen	Church	100	6	74	42	1 927
Riverside Hospital	Gen	NPA'ssn	70			30	227
St Luke's Hospital	Gen	Indiv	30			14	182
St Vincent's Hospital	Gen	Indiv	50			14	182
Key West 12 831—Monroe	Gen	City	320	30	627	266	9 202
U S Marine Hospital	Gen	N&M	50	9	96	14	680
Lake City 4 416—Columbia	Gen	Corp	70	10	300	30	1 660
Lake Shore Hospital	Gen	Church	100	6	74	42	1 927
Veterans Admin Facility	Gen	NPA'ssn	70			30	227
Lakeland 18 544—Polk	Gen	City	320	30	627	266	9 202
Morrell Memorial Hospital	Gen	Indiv	12	2	7	4	202
Lake Wales 3 401—Polk	Gen	NPA'ssn	20	4	20	6	400
Lake Wales Hospital	Gen	Indiv	12	2	7	4	202
Manatee 3 219—Manatee	Gen	Indiv	12	2	7	4	202
Riverside Hospital	Gen	NPA'ssn	15	2	10	10	187
Marianna 3 372—Jackson	Gen	County	120	12	126	67	2 126
Baltzell Hospital	Gen	City	320	30	627	266	9 202
Melbourne 2 677—Brevard	Gen	N&M	50	9	96	14	680
Brevard Hospital	Gen	Corp	70	10	300	30	1 660
Miami 110 637—Dade	Gen	City	320	30	627	266	9 202
Dade County Hospital	Gen	Indiv	12	2	7	4	202
James M Jackson Memorial Hospital**	Gen	N&M	50	9	96	14	680
Miami Retreat	Gen	Corp	70	10	300	30	1 660
Miami Riverside Hospital	Gen	Church	100	6	74	42	1 927
Victoria Hospital	Gen	NPA'ssn	70			30	227
Miami Beach 6 494—Dade	Gen	City	320	30	627	266	9 202
St Francis Hospital	Gen	Indiv	12	2	7	4	202
Miami Springs—Dade	Gen	N&M	50	9	96	14	680
Miami Battle Creek Sanitarium	Gen	NPA'ssn	70			30	227

FLORIDA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Ocala 7 281—Marion	Gen	CyCo	80	10	74	30	880
Munroe Memorial Hospital*	Gen	Church	112	12	100	50	1 220
Orlando 27 330—Orange	Gen	NPA'ssn	140	20	224	50	2 313
Florida Sanit and Hospital*	Gen	Part	10	3	64	5	310
Orange General Hospital	Gen	Part	22	2	14	4	320
Panama City 0 402—Bay	Gen	NPA'ssn	116	17	382	50	4 430
Panama City Hospital	Gen	Navy	142			06	487
Whitfield Hospital	Gen	Church	22	2	16	10	303
Pensacola 31 579—Escambia	Gen	NPA'ssn	55	5	74	30	1 230
Pensacola Hospital	Gen	NPA'ssn	60	7	123	07	468
U S Naval Hospital	Gen	City	25	2	8	7	260
Quincy 3 788—Gadsden	Gen	City	68	14	261	56	3 001
Gadsden County Hospital	Gen	Church	50	10	64	17	400
St Augustine 12 112—St Johns	Gen	NPA'ssn	20	6	63	9	500
East Coast Hospital	Gen	Indiv	10	5	13	5	240
Flagler Hospital	Gen	Indiv	60	12	38	5	630
St Petersburg 49 420—Pinellas	Gen	Indiv	10	2	10	3	910
City Hospital (Mercy Hospital col)	Gen	Indiv	13	3	No data supplied		
City Hospital (Mound Park Hospital)*	Gen	Indiv	28	6	00	9	547
St Anthony's Hospital	Gen	Frat	70	7	80	03	961
Sanford 10 100—Seminole	Gen	Indiv	28	5	116	16	810
Fernald Laughton Memorial Hospital	Gen	Church	63	12	71	20	500
Sarasota 8 398—Sarasota	Gen	City	100	20	567	131	4 071
Joseph Halton Hospital	Gen	City	33	1	No data supplied		
Sarasota Hospital	Gen	Orth	00			36	101
Sebring 2 912—Highlands	Gen	NPA'ssn	27	6	56	13	549
Sebring General Hospital	Gen	NPA'ssn	99	14	199	46	1 600
Dr Weems Hospital	Gen	NPA'ssn	26	2	9	17	797
Tallahassee 10 700—Leon	Gen	Indiv	16	3	17	19	436
Johnston's Sanitarium	Gen	County	18			13	
Tampa 101 161—Hillsborough	Gen	Indiv	18	4	63	8	440
Centro Asturiano Hospital	Gen	NPA'ssn	20	4	72	19	541
Dr H M Cook's Hospital	Gen	Indiv	28	6	60	18	
St Joseph's Hospital	Gen	Indiv	20	4	26	10	96
Tampa Municipal Hospital*	Gen	Indiv	20	4	26	10	96
Tampa Negro Hospital	Gen	Part	26	4		4	50
Umatilla 907—Lake	Gen	Part	26	4		4	50
Harry Anna Memorial Home for Crippled Children	Orth	NPA'ssn	40			10	147
Lake County Medical Center	Gen	NPA'ssn	18	16	17	2	06
West Palm Beach 26 610—Palm Beach	Gen	NPA'ssn	10	3	7	1	40
Good Samaritan Hospital*	Gen	NPA'ssn	99	14	199	46	1 600
Pine Ridge Hospital (col)	Gen	NPA'ssn	26	2	9	17	797
Related Institutions							
Daytona Beach 16 598—Volusia	Gen	Indiv	10	2	7	1	40
Daytona Beach Sanitarium	Gen	Indiv	10	2	7	1	40
Gainesville 10 465—Alachua	MeDe	State	018			510	64
Florida Farm Colony for Epileptic and Feeble-minded	Inst	State	40			9	810
University of Florida Infirmary	Gen	Part	10	4		2	
Homestead 2 319—Dade	Gen	Part	10	4		2	
Post Graduate Hospital	Gen	Part	10	4		2	
Jacksonville 129 549—Duval	Orth	NPA'ssn	21			00	114
Hope Haven	Gen	Indiv	16	3	17	19	436
Kissimmee 3 163—Osceola	Gen	Indiv	16	3	17	19	436
Osceola Hospital	Gen	Indiv	16	3	17	19	436
Largo 1 429—Pinellas	TB	County	18			13	
Pinellas County Home	Gen	Indiv	18	4	63	8	440
Leesburg 4 113—Lake	Gen	NPA'ssn	20	4	72	19	541
Theresa Holland Hospital	Gen	Indiv	28	6	60	18	
Miami 110 637—Dade	Gen	Indiv	20	4	26	10	96
Christian Hospital (col)	Gen	Indiv	20	4	26	10	96
Edgewater Hospital	Gen	Indiv	20	4	26	10	96
Orange Park 661—Clay	Inst	Frat	25			14	96
Moorehead Hospital	Gen	Indiv	20	4	26	10	96
Palatka 6 000—Putnam	Gen	Indiv	20	4	26	10	96
Glendale Hospital	Gen	Indiv	20	4	26	10	96
Mary Lawson Sanatorium (col)	Gen	Indiv	20	4	26	10	96
Palatka General Hospital	Gen	Part	26	4		4	50
Raiford 460—Union	Inst	State	40			00	400
Florida State Farm Hospital	Gen	Indiv	10	5	16	4	76
St Petersburg 40 420—Pinellas	Orth	NPA'ssn	40			10	147
American Legion Hospital for Crippled Children	Conv	Indiv	18	16	17	2	06
Carlo Restorion	Mat	NPA'ssn	10	3	17	7	166
Florence Crittenton Home	Gen	County	10	3	17	7	166
Stuart 1 924—Martin	Gen	County	10	3	17	7	166
St Lucie Sanitarium	Gen	County	10	3	17	7	166
Tallahassee 10 700—Leon	Gen	State	43	2	11	17	574
Florida Agricultural and Mechanical College Hosp (col)	Gen	Inst	43	2	11	17	574
Tampa 101 161—Hillsborough	TB	County	80			76	03
Hillsboro County Tuberculosis Sanatorium	N&M	Indiv	10				
Mills Hospital	Obil	NPA'ssn	24			18	21
Pine Heath Home for Tubercular Children	Gen	Indiv	10			No data supplied	
Tampa Sanitarium	Gen	Indiv	10			No data supplied	
Vero Beach 2 268—Indian River	Gen	Indiv	10	5	16	4	76
Indian River Hospital	Gen	Indiv	10	5	16	4	76
Summary for Florida							
		Number	Beds		Average Patients		Patients Admitted
Hospitals and sanatoriums		64	8 374		6 402		22 095
Related institutions		20	1 108		800		5 221
Totals		80	9 482		7 202		27 316
Refused registration		14	723				

Key to symbols and abbreviations is on page 798

GEORGIA

GEORGIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated	Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Albany 14 507—Dougherty	Gen	NPA'ssn	44	5	96	18	923	
Phoebe Putney Memorial Hosp	Gen	NPA'ssn	44	5	96	18	923	
Alto 219—Habersham	Gen	NPA'ssn	339			303	943	
State Tuberculo is Sanatorium	TB	State	339			303	943	
Americus 8 760—Sumter	Gen	CyCo	20	2	18	5	283	
Americus and Sumter County Hospital	Gen	CyCo	20	2	18	5	283	
Athens 18 10—Clarke	Gen	County	55	10	56	24	996	
Athens General Hospital	Gen	County	55	10	56	24	996	
Fairhaven Tuberculosis Sanat	TB	NPA'ssn	36			20	43	
St Marys Ho pital	Gen	Corp	3	4	No data supplied			
Atlanta 360 691—Fulton	Gen	NPA'ssn	142	12	422	6	3 144	
Albert Steiner Clinic for Can cer and Allied Diseases+	Ca	City	30			27	490	
Battle Hill Sanatorium	TB	CyCo	260			200		
Blackman Sanatorium	Gen	Indiv	2			15	500	
Crawford W Long Memorial Hospital	Gen	NPA'ssn	142	12	422	6	3 144	
Georgia Baptist Hospital+o	Gen	Church	164	20	726	118	5 378	
Grady Hospital+o	Gen	City	350	30	1 482	242	10 661	
Grady Hospital Emory Univer sity Division (col)+o	Gen	City	250	30	1 575	198	7 159	
Henrietta Eggleston Hospital for Children+	Chil	NPA'ssn	50	2		26	862	
Piedmont Hospital+o	Gen	Corp	120	15	220	73	2 486	
St Joseph Infirmary+o	Gen	Church	120	15	247	85	2 333	
Veterans Admin Facility	Gen	Vet	200			183	3 117	
Augusta 60 34—Richmond	Gen	City	300	22	620	203	6 600	
University Hospital+o	Gen	City	300	22	620	203	6 600	
Veterans Admin Facility	Ment	Vet	1 070			1 008	643	
Wilhenford Hospital for Women and Children	Gen	NPA'ssn	46	4	23	14	889	
Bainbridge 6 141—Decatur	Surg	Indiv	32	1		19	618	
Bainbridge Hospital	Gen	Part	30	4	32	12	412	
Riverside Hospital	Gen	Part	30	4	32	12	412	
Brunswick 14 022—Glynn	Gen	CyCo	75	6	65	20	575	
Brunswick City Hospital	Gen	CyCo	75	6	65	20	575	
Calro 3 169—Grady	Gen	Indiv	20	4	97	5	354	
Calro Hospital	Gen	Indiv	20	4	97	5	354	
Canton 2 892—Cherokee	Gen	Part	25	2	29	10	605	
Cokers Hospital	Gen	Part	25	2	29	10	605	
Cedartown 8 124—Polk	Gen	Indiv	8	2	10	2	92	
Hall Chaudron Hospital	Gen	Indiv	8	2	10	2	92	
Columbus 43 131—Muscogee	Gen	CyCo	250	12	225	73	3 585	
Columbus City Hospital+o	Gen	CyCo	250	12	225	73	3 585	
Cuthbert 2 235—Randolph	Gen	Indiv	28	4	22	11	537	
Patterson Hospital	Gen	Indiv	28	4	22	11	537	
Dalton 8 100—Whitfield	Gen	NPA'ssn	20	4	25	9	317	
Hamilton Memorial Hospital	Gen	NPA'ssn	20	4	25	9	317	
Decatur 13 276—De Kalb	Orth	Frat	60			46	267	
Scottish Rite Hospital for Crup pled Children	Orth	Frat	60			46	267	
Donal onville 1 183—Seminole	Gen	Part	30	10	50	10	260	
Cha on s Hospital	Gen	Part	30	10	50	10	260	
Douglas 4 906—Coffee	Gen	NPA'ssn	21	2		New		
Douglas Ho pital	Gen	NPA'ssn	21	2		New		
Dublin 6 681—Laurens	Gen	Indiv	38	3	20	19	1 811	
Claxton Sanitarium	Gen	Indiv	20	1	10	10	408	
Hicks Hospital	Gen	Indiv	25	3	20	11	496	
The Clinic	Gen	Part	25	3	20	11	496	
Lastman 3 022—Dodge	Gen	Indiv	28	4	11	8	378	
Coleman Sanatorium	Gen	Indiv	28	4	11	8	378	
Fiberton 4 650—Elbert	Gen	CyCo	15	5	12	5	342	
Liberty County Hospital	Gen	CyCo	15	5	12	5	342	
Emory University—De Kalb	Gen	NPA'ssn	250	16	327	85	3 463	
Emory University Hospital+o	Gen	NPA'ssn	250	16	327	85	3 463	
Fitzgerald 6 412—Ben Hill	Gen	Corp	20	4	No data supplied			
Fitzgerald Hospital	Gen	Corp	20	4	No data supplied			
Ft Benning—Chattahoochee	Gen	Army	353	9	109	176	4 316	
Station Hospital	Gen	Army	353	9	109	176	4 316	
Ft McPherson 100—Fulton	Gen	Army	210	4	22	199	1 676	
Station Ho pital	Gen	Army	210	4	22	199	1 676	
Ft Oglethorpe 1 186—Catoos a	Gen	Army	202			190	2 306	
Station Hospital	Gen	Army	202			190	2 306	
Ft Screven 17—Chatham	Gen	Army	30			39	1 065	
Station Hospital	Gen	Army	30			39	1 065	
Galne ville 8 694—Hall	Gen	Corp	52	6	74	27	1 259	
Downer Hospital	Gen	Corp	52	6	74	27	1 259	
Crimin 10 971—Spalding	Gen	Indiv	46	5	59	20	855	
R 1 Strickland and Son Me morial Hospital	Gen	Indiv	46	5	59	20	855	
Ho chton 427—Jackson	Gen	Part	11	2	13	4	202	
Allen Clinic and Hospital	Gen	Part	11	2	13	4	202	
Leop 2 705—Wayne	Gen	Part	23	3	2	10	368	
Dr. Colvin Rich Sanitarium	Gen	Part	23	3	2	10	368	
Lagrange 70 131—Troup	Gen	City	40	6	79	1	706	
Dun on Ho pital	Gen	City	40	6	79	1	706	
Macon 64 04—Bibb	TB	CyCo	24			20	45	
Hopewell Sanatorium	Gen	CyCo	166	16	572	150	4 328	
Macon Ho pital+o	Gen	CyCo	166	16	572	150	4 328	
Middle Georgia Hospital+o	Gen	Corp	35	6	47	17	901	
Oglethorpe Private Infirmary+o	Gen	Corp	35	6	47	17	901	
Pumpells Ma onburg Sanat	Gen	Corp	26	3	96	12	870	
St Luke Ho pital (col)	Gen	Indiv	12	1	12	2	86	
Marletta C S—Cobb	Gen	Corp	30	4		7		
Marletta Ho pital	Gen	Corp	30	4		7		
Metter 14 4—Candler	Gen	Indiv	12			5	350	
Metter Sanitarium	Gen	Indiv	12			5	350	
Milledgeville 74—Baldwin	N&M	Indiv	150			110	194	
Allen e Invalid Home	N&M	Indiv	150			110	194	
Milledgeville City Hospital	Gen	Indiv	150			110	194	
Milledgeville State Hospital+o	Ment	State	6 029			11	1 466	

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated	Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Millen 2 597—Jenkins	Gen	Indiv	24	4	20	9	448	
Millen Hospital	Gen	Indiv	24	4	20	9	448	
Mulkey Hospital	Gen	Indiv	24	4	20	9	448	
Monroe 3 706—Walton	Gen	NPA'ssn	16	1	11	3	105	
Walton County Hospital	Gen	NPA'ssn	16	1	11	3	105	
Montezuma 2 284—Macon	Gen	Part	25	3	18	6	258	
Macon County Clinic	Gen	Part	25	3	18	6	258	
Moultrie 8 027—Colquitt	Gen	Part	12	2	No data supplied			
Edmondson Brannen Hospital	Gen	Part	12	2	No data supplied			
Newnan 6 386—Coweta	Gen	NPA'ssn	21	2		250		
Newnan Hospital	Gen	NPA'ssn	21	2		250		
Plums 609—Sumter	Gen	Corp	50	2	7	12	425	
Wiss Sanitarium	Gen	Corp	50	2	7	12	425	
Rome 21 843—Floyd	Gen	Part	50	6	92	25	1 780	
Harbin Hospital	Gen	Part	50	6	92	25	1 780	
McCall Hospital	Gen	Corp	60	10	108	21	1 629	
Sandersville 3 011—Washington	Gen	Corp	50	7	30	15	861	
Rawlings Sanitarium	Gen	Corp	50	7	30	15	861	
Savannah 8 024—Chatham	Indus	NPA'ssn	62			48	1 742	
Central of Georgia Railway Hospital	Indus	NPA'ssn	62			48	1 742	
Charity Hospital (col)	Gen	NPA'ssn	40	12	229	35	1 317	
Georgia Infirmary (col)	Gen	NPA'ssn	40	12	229	35	1 317	
Oglethorpe Sanatorium	Gen	Indiv	50	8	87	30	1 094	
St Joseph Hospital+o	Gen	Church	100	12	225	37	1 486	
Telfair Hospital	Gen	NPA'ssn	62	16	253	50	1 727	
U S Marine Hospital	Gen	USPHS	165			148	1 719	
Warren A Candler Hospital+o	Gen	Church	66	9	176	42	1 821	
Smyrna 1 178—Cobb	N&M	Indiv	40			31	340	
Dr Brawner s Sanitarium	N&M	Indiv	40			31	340	
Statesboro 3 996—Bulloch	Gen	Indiv	25	4	5	10	175	
Van Buren s Sanitarium (col)	Gen	Indiv	25	4	5	10	175	
Stone Mountain 1 355—De Kalb	N&M	Indiv	25			15	87	
Stone Mountain Sanitarium	N&M	Indiv	25			15	87	
Swainsboro 2 442—Emanuel	Gen	Indiv	25	2	24	5	225	
Franklin Hospital	Gen	Indiv	25	2	24	5	225	
Thomaston 4 922—Upson	Gen	Indiv	14	3	7	2	169	
Blackburn Hospital	Gen	Indiv	14	3	7	2	169	
Thomasville 11 733—Thomas	Gen	NPA'ssn	103	12	75	40	1 836	
John D Archbold Memorial Hospital	Gen	NPA'ssn	103	12	75	40	1 836	
Tifton 3 390—Tift	Gen	Corp	20	2		9		
Coastal Plain Hospital	Gen	Corp	20	2		9		
Trion 3 289—Chattooga	Gen	Indiv	25	5	45	13	665	
Riegel Hospital	Gen	Indiv	25	5	45	13	665	
Valdosta 13 482—Lowndes	Gen	Indiv	22			6		
Frank Bird Hospital	Gen	Indiv	22			6		
Little Griffin Private Hospital	Gen	Corp	4			19		
Washington 3 158—Wilkes	Gen	NPA'ssn	30	2	12	8	334	
Washington General Hospital	Gen	NPA'ssn	30	2	12	8	334	
Waycross 15 510—Ware	Indus	Corp	75			35	1 191	
Atlantic Coast Line Hospital	Indus	Corp	75			35	1 191	
Ware County Hospital	Gen	County	68	8	100	43	1 803	

Related Institutions

Adel 1 796—Cook	Gen	Part	7		3	150
Adel Hospital						
Atlanta 360 691—Fulton	Gen	Indiv	20	6		196
Atlanta Hospital	N&M	Indiv	12			No data supplied
Brook Haven Manor Sanat	Mat	NPA'ssn	25	1	37	49
Florence Crittenton Home	Gen	Indiv	12	2		36
Georgia Sanitarium	Mat	Indiv	8	8	12	3
St Marys Hospital	Inst	Fed	187			94 985
U S Penitentiary Hospital	Ven	City	68			26 456
Venerable Hospital and Clinic						
William A Harris Memorial Hospital (col)	Gen	Indiv	13	2		No data supplied
Barwick 499—Brooks	Gen	Indiv	12	2	15	4
Sanchez Private Sanitarium						
Columbus 43 131—Muscogee	TB	County	30			25
Muscogee County Tuberculosis Sanatorium						
Cordele 6 680—Crisp	Gen	Corp	11		3	4
Cordele Sanatorium	Gen	Church	14	2	5	3
Gillespie Hospital (col)						
Gracewood 91—Richmond	MeDe	State	250			240
Georgia Training School for Mental Defectives	Inst	TB	75			61
Milledgeville 5 534—Baldwin	Gen	Indiv	9	1	15	3
Georgia State Penitentiary Tubercular Hospital	TB	NPA'ssn	13			13
Moultrie 8 027—Colquitt	Gen	Part	30	4		No data supplied
Daniel Emergency Sanitarium	Gen	Corp	20	4	22	6
Savannah 8 024—Chatham						
Kwanis Sunshine Preventorium	Orth	NPA'ssn	100			267
Statesboro 3 996—Bulloch						
Statesboro Hospital						
Summersville 933—Chattooga						
Summersville Prison Hospital						
Warm Springs 400—Meriwether						
Georgia Warm Springs Foundation						
Summary for Georgia	Number	Beds	Average Patients	Patients Admitted		
Hospitals and sanatoriums	85	13 775	11 757	112 599		
Related institutions	20	906	521	7 853		
Totals	105	14 681	11 578	116 457		
Refused registration	2					

IDAHO

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
American Falls 1250—Power Schiltz Memorial Hospital	Gen	County	20	4	91	12	774
Boise 21544—Ada	Gen	County	125	10	274	94	2397
St Alphonsus Hospital	Gen	Church	100	14	491	90	4343
St Luke's Hospital	Gen	Church	02			180	993
Veterans Admin Facility	Gen	Vet					
Bonnery Ferry 1418—Boundary	Gen	Corp	20	1	40	9	200
Bonnery Ferry Hospital	Gen	Corp					
Coeur d'Alene 8297—Kootenai	Gen	NPA's n	40	2		13	143
Coeur d'Alene Hospital	Gen	Indiv	12	1	19	11	60
Idaho Falls Hospital	Gen	Indiv					
Cottonwood 119—Idaho	Gen	Church	1	4	6	7	469
Our Lady of Consolation Hosp	Gen	Church					
It Hall 150—Bingham	Gen	IA	14	4	44	11	224
Gooding 1392—Gooding	Gen	CoCo	18	6	64	11	397
Gooding County Hospital	Gen	CoCo					
Hailey 96—Blaine	Gen	Indiv	10	6	14		304
Hailey Clinical Hospital	Gen	Indiv					
Idaho Falls 9429—Bonnieville	Gen	Church	2	18	69	24	882
Idaho Falls Latter Day Saints Hospital	Gen	Church	40	8		19	
Spencer Hospital	Gen	Corp					
Kellogg 4124—Shoshone	Gen	Part	20	4	47	12	106
Wardner Hospital	Gen	Part					
Lapwai 416—New Perce	TB	IA	132			112	201
It Lapwai Sanatorium	TB	IA					
Idaho Falls 940—New Perce	Gen	Church	90	12	216	9	1515
St Joseph's Hospital	Gen	Church	2	3		20	
White Hospital	Gen	Corp					
Montpelier 2436—Bear Lake	Gen	Indiv	8	1	7	6	97
Montpelier Hospital	Gen	Indiv					
Moscow 4476—Latah	Gen	Indiv		7	68	14	638
Gritman Private Hospital	Gen	Indiv					
Nampa 8706—Canyon	Gen	Church	40	8	116	19	707
Mercy Hospital	Gen	Church					
Nimrod Missionary Sanatorium and Institute	Gen	Church	20	6	72	21	1747
Orofino 1078—Clearwater	Gen	Part	0	4	70	30	484
Orofino Hospital	Gen	Part					
Pocatello 16471—Bannock	Gen	County	20	10	200	32	1090
Pocatello General Hospital	Gen	County					
St Anthony Mercy Hospital	Gen	Church	20	9	240	0	1118
Potlatch 107—Latah	Gen	Part	20	4	2	9	242
Potlatch Hospital	Gen	Part					
Preston 301—Franklin	Gen	Corp	10	4	80	10	648
General Memorial Hospital	Gen	Corp					
Rexburg 7048—Madison	Gen	Indiv	10	3		4	
Rexburg General Hospital	Gen	Indiv					
Rupert 2200—Minidoka	Gen	Indiv	18	2	6		60
Rupert General Hospital	Gen	Indiv					
St Maries 1996—Beneviah	Gen	Part	21	2	20	9	288
St Maries Hospital	Gen	Part					
Sandpoint 3200—Bonner	Gen	Indiv	20	6	7	3	10
Page Hospital	Gen	Indiv					
Soda Springs 81—Caribou	Gen	County	40	2	10	27	1020
Caribou County Hospital	Gen	County					
Twin Falls 8787—Twin Falls	Gen	County	20	10	169	50	1897
Twin Falls County General Hospital	Gen	County					
Wallace 3634—Shoshone	Gen	Church	40	10	64	23	846
Providence Hospital	Gen	Church					
Wallace Hospital	Gen	Part	20	6	24	15	523
Wendell 720—Gooding	Gen	Church	20	5	71	9	395
St Valentine's Hospital	Gen	Church					
Related Institutions							
Blackfoot 3199—Bingham	Gen	Indiv	7	2	21		226
Dr W W Beck Hospital	Gen	Indiv					
State Hospital South	Gen	State	600			10	100
Boise 21544—Ada	Gen	State					
Idaho State Soldiers Home	Gen	State	27			8	40
Idaho State Soldiers Home	Gen	State					
Salvation Army Women Home	Mat	Church	30	10	82	3	110
Salvation Army Women Home	Mat	Church					
Malad City 273—Onelda	Gen	NPA's n	7	4			
Community Hospital	Gen	NPA's n					
Moscow 4476—Latah	Gen	Indiv	12				
Inland Empire Hospital	Gen	Indiv					
University of Idaho Infirmary	Gen	State	10			12	943
Nampa 8206—Canyon	MeDe	State	10			10	41
State School and Colony	MeDe	State					
Orofino 1078—Clearwater	MeDe	State	400			360	84
Orofino Hospital	MeDe	State					
Idaho Falls 9429—Bonnieville	Gen	Indiv	10			1	60
Priest River Hospital	Gen	Indiv					
St Maries 1996—Beneviah	Gen	Indiv	12	3	No data supplied		
Dr Platt's Hospital	Gen	Indiv					
Salmon 1371—Lemhi	Gen	Part	9	3	24	2	84
Salmon General Hospital	Gen	Part					
Sandpoint 3200—Bonner	Gen	Indiv	20	4	6	1	38
Parnell Hospital	Gen	Indiv					
Spirit Lake 1241—Kootenai	Gen	Part	10	3	10	2	34
Spirit Lake Hospital	Gen	Part					
Summary for Idaho							
Hospital and sanatorium	20		1670		982		2646
Related institutions	14		1681		1420		2172
Total	40		3351		2415		4818
Per cent registration	2						

ILLINOIS

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Alton 1011—Madison	Gen	State	137				1462
Alton State Hospital	Gen	State					
St Anthony's Infirmary and Sanatorium	Gen	Church	60			60	35
St Joseph's Hospital	Gen	Church	60	12	107	40	1867
Amboy 1972—Lee	Gen	Corp	12	5	41	6	709
Amboy Public Hospital	Gen	Corp					
Anna 436—Union	Gen	Corp					
Anna State Hospital	Gen	State	2080			2080	30
Hale Willard Memorial Hospital	Gen	City	12	4		10	30
Annawan 489—Henry	Gen	Indiv	20	2	6	3	108
J M Young Hospital	Gen	Indiv					
Aurora 46389—Kane	Gen	NPA's n	109	18	200	41	100
Copley Hospital	Gen	NPA's n					
Kane County Spring Brook Sanatorium	IB	County	85			81	119
Mercyville Sanatorium	N&M	Church	100			126	285
St Charles Hospital	Gen	Church	100	20	381	64	1900
St Joseph Mercy Hospital	Gen	Church	100	20	411	60	206
Batavia 504—Kane	N&M	Corp	76			20	13
Bellevue Place Sanatorium	IB	NPA's n	40			47	48
Loc River Sanatorium	IB	NPA's n					
Bellevue 2842—St Clair	Gen	Church	110	10	271	30	109
St Elizabeth's Hospital	Gen	Church					
Station Hospital	Gen	Army					
Belvidere 8121—Boone	Gen	NPA's n	20	10	80	11	49
St Joseph's Hospital	Gen	Church	30	12	81	60	
Benton 8219—Franklin	Gen	Indiv	20	1	8	9	48
Moore Hospital	Gen	Indiv					
Berwyn 47027—Cook	Gen	NPA's n	70	18	76	0	161
Berwyn Hospital	Gen	NPA's n					
Bloomington 30930—McLean	Gen	Church	72	10	162	48	148
Memorial Hospital	Gen	Church	200	20	341	107	1000
St Joseph Hospital	Gen	Church					
Blue Island 16034—Cook	Gen	Church	60	15	220	20	1140
St Francis Hospital	Gen	Church					
Breese 1057—Clinton	Gen	Church	25	5	49	11	44
St Joseph Hospital	Gen	Church					
Bu hnell 2800—McDonough	IB	County	36			0	44
Elmhurst Sanatorium	IB	County					
Caro 1072—Alexander	Gen	Church	100	10	74	31	1116
St Mary's Hospital	Gen	Church					
Canton 11718—Fulton	Gen	NPA's n	48	8	160	0	108
Graham and Murphy Hospital	Gen	NPA's n					
Carbondale 7028—Jackson	Gen	Church	50		74	13	84
Holden Memorial Hospital	Gen	Church					
Carlinville 4144—Macoupin	Gen	Indiv	20	6	64	10	01
Macoupin Hospital	Gen	Indiv					
Carmi 2012—White	Gen	NPA's n	10	2	3	0	100
Carmi Hospital	Gen	NPA's n					
Centralia 12083—Marion	Gen	Church	40	4	71	22	90
St Mary's Hospital	Gen	Church					
Champaign 20348—Champaign	Gen	City	70	17	269	40	418
Burnham City Hospital	Gen	City					
Charleston 8012—Colas	Gen	NPA's n	21	4	19	8	70
W A Montgomery Memorial Sanatorium	Gen	NPA's n	21	4	19	8	70
Oakwood Hospital	Gen	Indiv	21	4	19	8	70
Chicago 37643—Cook	Medical and Surgical Unit of Lower						
Albert Merritt Billings Hospital	Medical and Surgical Unit of Lower						
City of Chicago Clinics	City of Chicago Clinics						
Alexian Brothers Hospital	Gen	Church	207			140	108
American Hospital	Gen	NPA's n	150	20	136	70	1887
Auburn Park Hospital	Gen	NPA's n	125	20	216	29	100
Augustana Hospital	Gen	Church	320	20	479	142	404
Belmont Hospital	Gen	Corp	100	36	389	66	984
Bethany Home Hospital	Gen	Church	17	2	28	9	260
Bethany Sanit and Hospital	Gen	Church	10	12	16	19	100
Boys Roberts Memorial Hospital for Children	Children	Pediatric Unit of Uni					
University of Chicago Clinics	University of Chicago Clinics						
Burrows Hospital	Gen	Indiv	40	6	33	16	248
Chicago Eye Ear Nose and Throat Hospital	Gen	Corp	70			12	0
Chicago Fresh Air Hospital	TB	NPA's n	100			79	91
Chicago Lying in Hospital and Dispensary	Mat	NPA's n	162	160	281	100	3940
Chicago Memorial Hospital	Gen	NPA's n	88	20	4	40	2080
Chicago State Hospital	Gen	State	4118			400	1489
Children's Memorial Hospital	Chil	NPA's n	264			100	343
City of Chicago Municipal Tuberculosis Sanatorium	TB	City	1200	1	12	1188	2028
Columbus Hospital	Gen	Church	100	10	209	78	260
Cook County Children's Hospital	Unit of Cook County Hospital	Gen	County	310	100	3647	7000
Cook County Children's Hospital	Unit of Cook County Hospital	Gen	County	310	100	3647	7000
Cook County Psychopathic Hospital	N&M	County	180			102	100
Edgewater Hospital	Gen	NPA's n	120	18	42	66	2860
Englewood Hospital	Gen	NPA's n	101	20	371	60	277
Evangelical Deaconess Hospital	Gen	Church	60	20	129	20	619
Franklin Hospital	Gen	Church	200	60	1081	107	900
Frances E Willard Hospital	Gen	NPA's n	110	20	363	37	900
Franklin Boulevard Hospital	Gen	Corp	60	20	208	42	200
Carfield Park Community Hospital	Gen	NPA's n	100	32	26	60	2095
Grant Hospital	Gen	NPA's n	200	40	672	109	382
Henrotin Hospital	Gen	NPA's n	100	18	148	30	200
Holy Cross Hospital	Gen	Church	90	24	721	78	3040
Hospital of St Anthony de Padua	Gen	Church	200	40	90	112	3990
Illinois Central Hospital	Gen	NPA's n	200	28	482	130	4134
Illinois Eye and Ear Infirmary	Gen	State	200			168	440
Illinois Masonic Hospital	Gen	Frat	100	20	200	60	200
Jackson Park Hospital	Gen	NPA's n	220	40	400	64	200

Key to symbols and abbreviations is on page 798

ILLINOIS—Continued

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Key to symbols and abbreviations is on page 798

ILLINOIS—Continued

ILLINOIS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Mt Vernon 12 375—Jefferson	Gen	Indiv	20		No data supplied		
Mt Vernon Hospital	Gen	Indiv	20	10	23	12	167
Moweaqua 1 478—Shelby	Gen	Indiv	20	4	33	17	736
Moweaqua Hospital	Gen	Church	50	4	33	17	736
Murphysboro 8 182—Jackson	Gen	Church	50	4	33	17	736
St Andrew's Hospital	Gen	Church	50	4	33	17	736
Naperville 5 118—Du Page	Gen	Church	50	4	33	17	736
Edward Sanatorium	TB	NPA'ssn	88			49	130
Normal 6 768—McLean	Gen	Church	87	1	100	48	1 901
Brokaw Hospital	IB	County	46			30	43
Fairview Sanatorium	Gen	Church	87	1	100	48	1 901
North Chicago 8 466—Lake	Gen	Church	87	1	100	48	1 901
Veterans Admin Facility	Ment	Vet	1 130			1 173	370
Oak Forest 50—Cook	Gen	Chr	1 004			1 016	1 330
Cook County Infirmary	Gen	Chr	1 004			1 016	1 330
Cook County Tuberculosis Hospital	IB	County	634			462	421
Oak Park 63 982—Cook	Gen	Church	120	40	36	80	3 061
Oak Park Hospital	Gen	Church	120	40	36	80	3 061
West Suburban Hospital	Gen	NPA'ssn	327	100	1 100	100	6 638
Olney 6 140—Richland	Gen	Corp	68	7		45	
Olney Sanatorium	Gen	Corp	68	7		45	
Ottawa 10 004—La Salle	TB	County	60			31	42
Highland	TB	County	60			31	42
Ottawa Tuberculosis Sanat	TB	Corp	110			80	144
Ryburn Memorial Hospital	Gen	City	63	12	204	30	1 252
Pana 5 830—Christian	Gen	Church	50	6	52	18	611
Huber Memorial Hospital	Gen	Church	50	6	52	18	611
Paris 8 781—Ldgar	Gen	NPA'ssn	40	6	27	34	940
Paris Hospital	Gen	NPA'ssn	40	6	27	34	940
Pekin 16 129—Lazewell	Gen	NPA'ssn	50	12	304	34	1 816
Pekin Public Hospital	Gen	NPA'ssn	50	12	304	34	1 816
Peoria 104 969—Peoria	Gen	NPA'ssn	100	18	146	66	2 376
John C Proctor Hospital	Gen	NPA'ssn	100	18	146	66	2 376
Methodist Hospital of Central Illinois	Gen	Church	103	20	533	129	4 14
Michell Farm	N&M	Indiv	26			13	30
Peoria Municipal Tuberculosis Sanatorium	TB	City	93			92	99
Peoria Sanatorium	N&M	Indiv	20			10	81
Peoria State Hospital	N&M	State	2 694			2 610	730
St Francis Hospital	Gen	Church	300	30	864	227	7 288
Peru 9 121—La Salle	Gen	NPA'ssn	00	10	111	36	1 546
Peoples Hospital	Gen	NPA'ssn	00	10	111	36	1 546
Pontiac 8 272—Livingston	TB	County	37			26	46
Livingston County Sanatorium	TB	County	37			26	46
St James Hospital	Gen	Church	0	12	100	18	862
Princeton 4 762—Bureau	Gen	City	40	8	80	21	796
Julia Rackley Perry Memorial Hospital	Gen	City	40	8	80	21	796
Quincy 39 241—Adams	Gen	NPA'ssn	120	22	2 8	57	2 049
Blessing Hospital	IB	County	50			44	40
Hillcrest	Gen	Church	190	20	444	140	3 600
St Mary Hospital	Gen	Church	190	20	444	140	3 600
Rantoul 1 500—Champaign	Gen	Arm	50			3	11
Station Hospital	Gen	Arm	50			3	11
Red Budd 1 208—Randolph	Gen	Church	20	2	11	12	194
St Clement's Hospital	Gen	Church	20	2	11	12	194
Robinson 3 668—Crawford	Gen	Part	18	5	16	3	124
Robinson Hospital	Gen	Part	18	5	16	3	124
Rockford 83 064—Winnebago	N&M	Indiv	30			20	100
Elm Lawn-Wilgus Sanatorium	Gen	NPA'ssn	92	18	101	40	1 544
Rockford Hospital	Gen	NPA'ssn	92	18	101	40	1 544
Rockford Municipal Tuberculosis Sanatorium	TB	City	120			110	86
St Anthony's Hospital	Gen	Church	180	26	591	120	4 124
Swedish American Hospital	Gen	NPA'ssn	80	12	207	47	1 443
Winnebago County Hospital	Gen	County	90	6	46	54	1 107
Rock Island 37 903—Rock Island	TB	County	70			70	67
Rock Island County Tuberculosis Sanatorium	Gen	Church	100	18	192	61	1 860
St Anthony's Hospital	Gen	Church	100	18	192	61	1 860
Rosiclare 1 794—Hardin	Gen	Indiv	10	2	6	2	99
Rosiclare Hospital	Gen	Indiv	10	2	6	2	99
Rushville 2 380—Schuyler	Gen	Indiv	20	3	11	5	176
Culbertson Hospital	Gen	Indiv	20	3	11	5	176
St Charles 5 377—Kane	Gen	NPA'ssn	20	6	45	5	200
St Charles City Hospital	Gen	NPA'ssn	20	6	45	5	200
Sandwich 2 611—De Kalb	Gen	NPA'ssn	26	10	73	9	308
Horatio N Woodward Memorial Hospital	Gen	NPA'ssn	26	10	73	9	308
Savanna 5 086—Carroll	Gen	City	10	5	40	4	174
Savanna Public Hospital	Gen	City	10	5	40	4	174
Shelbyville 3 491—Shelby	Gen	NPA'ssn	17		27	8	310
Shelby County Memorial Hosp	Gen	NPA'ssn	17		27	8	310
Springfield 71 864—Sangamon	TB	Corp	75			29	67
Palmer Sanatorium	Gen	Church	767	47	846	47	9 699
St John's Hospital	Gen	Church	30			423	
St John's Sanatorium	Gen	NPA'ssn	100	10	400	91	3 031
Springfield Hospital	Gen	NPA'ssn	100	10	400	91	3 031
Spring Valley 5 270—Bureau	Gen	Church	63	7	100	40	1 000
St Margaret's Hospital	Gen	City	51	12	190	17	707
Sterling 10 012—White Ide	Gen	City	51	12	190	17	707
Public Hospital	Gen	City	51	12	190	17	707
Streator 14 720—La Salle	Gen	Church	125	10	229	52	3 206
St Mary Hospital	Gen	Church	125	10	229	52	3 206
Sublette 201—Lee	Mat	Indiv	10	9	42	3	226
Anger Maternity Hospital	Mat	Indiv	10	9	42	3	226
Sveamore 4 021—De Kalb	Gen	City	23	7	00	9	356
Sveamore Municipal Hospital	Gen	City	23	7	00	9	356
Taylorville 3 316—Christian	Gen	Church	00	11	129	46	1 311
St Vincent Hospital	Gen	Church	00	11	129	46	1 311
Tuscola 2 000—Douglas	Gen	County	20	6	40	15	409
Douglas County Inman Ho p	Gen	County	20	6	40	15	409

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Urbana 13 000—Champaign							
Carle Memorial Hospital	Gen	Corp	30	10	51	1	70
Champaign County Hospital	Gen	County	50	8	46	12	100
Mercy Hospital	Gen	Church	56	12	100	34	100
The Outlook	TB	County	36			34	100
Vandalla 4 342—Fayette							
Mark Greer Hospital	Gen	Indiv	20	6	61	16	40
Waterman 520—De Kalb							
East Side Hospital	Gen	Indiv	20	7	58	14	40
Watseka 3,144—Iroquois							
Iroquois Hospital	Gen	CyCo	30	8	114	90	80
Waukegan 33 499—Lake							
Lake County General Hospital	Gen	County	80	10	134	77	120
St Therese's Hospital	Gen	Church	130	16	432	56	800
Victory Memorial Hospital	Gen	NPA'ssn	76	13	211	23	100
Winfield 445—Du Page							
Winfield Sanatorium	TB	NPA'ssn	110			86	115
Zace Sanatorium	TB	Corp	0			0	00
Woodstock 5 471—McHenry							
Woodstock Public Hospital	Gen	NPA'ssn	21	7	30	8	300
Zeigler 3 816—Franklin							
Zeigler Hospital	Gen	NPA'ssn	15	1	3	4	100
Related Institutions							
Arrowsmith 279—McLean							
L M Johnson Hospital	Gen	Indiv	10	2	12	0	60
Avon 799—Fulton							
Saunders Hospital	Gen	NPA'ssn	12	4		New	
Chester 3 022—Randolph							
Riverview Hospital	Gen	Indiv	10	1			
Chicago 3 376 438—Cook							
Beverly Hills Rest Home	Conv	Indiv	8			0	00
Carnegie Illinois Steel Corpora							
tion Hospital	Indus	Corp	00			13	80
Chicago Home for Conva							
lescent Women and Children	Conv	NPA'ssn	50			30	231
Chicago Home for Incurables	Inc	NPA'ssn	292			291	100
House of Correction Hospital	Gen	City	75			100	100
Infirmary of Medical Relief Ser							
vice Illinois Emergency Relief	Gen	State	294			00	150
Isolation Hospital	SmPo	City	30			9	00
Long's Convalescent Home	Conv	Indiv	12			9	00
Rest Haven Home for Conva							
lescents	Conv	NPA'ssn	45			40	000
Salvation Army Women's Home							
and Hospital	Mat	Church	20	12	206	14	200
Washington and Jane Smith							
Home	Inst	Cen	21			10	00
Decatur 57 510—Macon							
City Public Hospital	Is	City	20			9	100
Dixon 9 908—Lee							
Dixon State Hospital	Ment	State	3 320			170	40
Dwight 2 534—Livingston							
Dwight Community Hospital	Gen	NPA'ssn	5	4	18	1	60
Eldorado 4 482—Saline							
Ferrell Hospital	Gen	Indiv	16	2	11	4	100
Evansston 63 338—Cook							
The Cradle	Chil	NPA'ssn	30			20	000
Grove House for Convalescents	Conv	NPA'ssn	38			00	000
Fairbury 2 310—Livingston							
Fairbury Hospital	Gen	NPA'ssn	10	5	34	0	100
Flora 4 892—Clay							
Flora Hospital	Gen	Indiv	8	2	18	4	000
Geneva 4 607—Kane							
State Training School for Girls	Inst	State	20	20		10	10
Godfrey 201—Madison							
Beverly Farm	MeDe	Corp	70			00	8
Henry 1 608—Marshall							
Drs Coggeshall and Dyart							
Hospital	Gen	Part	8	4	00	3	100
Hinsdale 6 923—Du Page							
West Suburban Home for Girls	Mat	NPA'ssn	20	16	36	10	00
Lincoln 12 800—Logan							
Lincoln State School and Col							
ony	MeDi	State	3 800	6	12	300	413
Mattoon 14 631—Coles							
Independent Order Odd Fellows							
Old Folks Home Hospital	Inst	Frat	53			34	100
Menard 22—Randolph							
Illinois Security Hospital	Ment	State	506			400	00
Prison Hospital of Illinois State							
Penitentiary	Inst	State	36			19	40
Metropolis 5 503—Massac							
Fisher Hospital	Gen	Indiv	14	2	22	2	200
Minonk 1 910—Woodford							
Woodford County Tuberculo							
sis Sanatorium	TB	County	12			8	8
Mooseheart 1 019—Kane							
Mooseheart Memorial Hospital	Chil	Frat	70			34	000
Mt Prospect 1 220—Cook							
Mt Prospect General Hospital	Gen	NPA'ssn	20	4	10	2	100
Normal 6 768—McLean							
Soldiers and Sailors Children's							
School	Inst	State	20			10	100
Paxton 2 892—Ford							
Paxton Community Hospital	Gen	NPA'ssn	16	4	30	4	200
Pinehurst 3 016—Ferry							
Hiller Hospital	Gen	Indiv	10	3		8	
Pontiac 8 202—Livingston							
Illinois State Reformatory							
Hospital	Inst	State	00			19	500
Quincy 39 041—Adams							
Illinois Soldiers and Sailors							
Home and Hospital	Inst	State	100			12	900
St Charles 5 377—Kane							
St Charles School for Boys	Inst	State	30			20	000

ILLINOIS—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Savanna 5 086—Carroll Station Hospital	Gen	Army	7			1	96
Sullivan 2 339—Moultrie Illinois Masonic Home	Inst	Frat	8			80	95
Urbana 13 060—Champaign McKinley University Hospital	Inst	State	8			40	2 100
Wedron 202—La Salle St Joseph's Health Re ort	Conv	Church	50			31	746
West Chicago 3 477—Du Page Country Home for Convalescent Crippled Children	Orth	NPA's'n	120			96	137
Wheaton 7 038—Du Page Howe Home	N&M	Part	13			8	4
Mary E Pogue School	McDe	Indiv	44			96	40
Wheaton Health Resort	Gen	Part	30	12	10	7	53
Wheeling 467—Cook Wheeling Hospital	Gen	Indiv	9	5	6	1	32
White Hall 2 928—Greene White Hall Hospital	Gen	Indiv	6	5	No data supplied		
Winnetka 12 166—Cook North Shore Health Resort	Conv	Corp	75			45	271
Summary for Illinois	Number	Beds	Average Patients	Patients Admitted			
Hospitals and sanatoriums	267	65 893	51 834	525 141			
Related Institutions	54	10 056	8 719	18 000			
Totals	321	75 949	60 553	543 141			
Refused registration	41	1 393					

INDIANA

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Anderson 39 804—Madison St John's Hickey Memorial Hospital	Gen	Church	90	15	282	66	2 005
Angola 9 665—Steuven Cameron Hospital	Gen	Indiv	17	2	25	0	536
Argos 1 211—Marshall Kelly Hospital	Gen	Indiv	10	4	13	4	135
Auburn 5 088—De Kalb Dr Bonnell M Souder Hosp	Gen	Indiv	20	12	25	5	157
Batesville 2 538—Ripley Margaret Mary Hospital	Gen	Church	50	10	No data supplied		
Bedford 13 208—Lawrence Dunn Memorial Hospital	Gen	NPA's'n	25	6	82	13	675
Beech Grove 3 557—Marion St Francis Hospital	Gen	Church	140	25	455	63	1 820
Bloomington 18 227—Monroe Bloomington Hospital	Gen	NPA's'n	35	5	64	25	1 262
Bluffton 5 674—Wells Wells County Hospital	Gen	County	19	3	48	15	536
Brazil 8 744—Clay Clay County Hospital	Gen	County	40	10	26	15	475
Clinton 7 936—Vermillion Vermillion County Hospital	Gen	County	35	6	57	25	576
Columbus 9 935—Bartholomew Bartholomew County Hospital	Gen	County	45	5	103	21	783
Crawfordsville 10 355—Montgomery Culver Hospital	Gen	County	50	12	141	33	1 516
Crown Point 4 616—Lake Lake County Tuberculosis Sanatorium	TB	County	190			201	170
Decatur 5 156—Adams Adams County Memorial Hosp	Gen	County	28	6	41	14	650
East Chicago 64 784—Lake St Catherine's Hospital	Gen	Church	190	60	502	108	3 198
Elkhart 2 919—Elkhart Elkhart General Hospital	Gen	NPA's'n	75	10	271	79	1 408
Elwood 10 635—Madison Mercy Hospital	Gen	Church	20	5	244	16	849
Evansville 102 249—Vanderburgh Boehne Tuberculosis Hospital	TB	County	120			118	683
Evansville State Hospital	Ment	State	1 000			1 100	801
Protestant Deaconess Hosp	Gen	Church	154	16	34	95	3 295
St Mary's Hospital	Gen	Church	125	22	85	84	3 270
St Marine Hospital	Gen	USPHS	100			68	592
Welborn Walker Hospital	Gen	Corp	105	6	82	66	2 531
St Benjamin Harri on—Marion Station Hospital	Gen	Army	150	4	35	132	2 410
St Wayne 114 646—Allen Irene Byron Tuberculo i Sanat	TB	County	200			176	233
Futherland Hospital	Gen	Church	125	22	46	101	2 924
Methodist Episcopal Hospital	Gen	Church	57	22	164	44	2 352
St Joseph Hospital	Gen	Church	243	57	610	134	4 530
Frankfort 12 195—Clinton Clinton County Hospital	Gen	County	45	7	71	17	655
Greent 4 455—De Kalb Sacred Heart Hospital	Gen	Church	41	7	17	19	445
Gray 100 456—Lake (arr Hospital)	Indus	Corp	100			19	141
Methodist Episcopal Hospital	Gen	Church	50	20	520	7	2 780
St Antonio Hospital	Gen	Corp	50	6	4	29	446
St John Hospital (col)	Gen	Indiv	15	6	20	3	365
St Mary's Mercy Hospital	Gen	Church	255	35	769	132	4 535
Greent 4 456—Putnam Putnam County Hospital	Gen	County	40	5	41	16	652
Greenburg C—Decatur Decatur County Memorial Hosp	Gen	County	25	6	41	11	424

INDIANA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Hammond 64 560—Lake Mount Mercy Sanatorium	N&M	Church	32			25	150
St Margaret's Hospital	Gen	Church	214	36	655	105	3 595
Hartford City 6 613—Blackford Blackford County Hospital	Gen	County	30	5	90	11	322
Huntington 13 450—Huntington Huntington County Hospital	Gen	County	27	6	98	15	559
Indianapolis 364 161—Marion Central State Hospital	Ment	State	1 729			1 768	351
Dr W B Fletcher's Sanat	N&M	Corp	50			13	111
Indianapolis City Hospital	Gen	City	58	39	593	429	10 913
Indiana University Hospital	Gen	State	462	42	944	388	8 256
James Whitcomb Riley Hospital for Children	Gen	Pediatric Unit of Indiana University Hospitals					
Kiwanis Home	Unit of Indiana University Hospitals						
Methodist Episcopal Hospital	Gen	Church	458	48	913	330	13 315
Norways' Sanatorium	N&M	Corp	30			5	79
Robert W Long Hospital	Medical and Surgical Unit of Indiana University Hospitals						
Rotary Convalescent Home	Unit of Indiana University Hospitals						
St Vincent's Hospital	Gen	Church	260	35	491	168	5 368
Veterans' Admin Facility	Gen	Vet	173			152	1 702
William H Coleman Hospital for Women	Gen	Maternity Unit of Indiana University Hospitals					
Jeffersonville 11 946—Clark Clark County Memorial Hosp	Gen	County	35	6	No data supplied		
Kendallville 5 439—Noble Lake-side Hospital	Gen	City	21	12	65	14	359
Kokomo 32 843—Howard Good Samaritan Hospital	Gen	Church	57	8	110	33	1 109
LaFayette 26 240—Tippecanoe LaFayette Home Hospital	Gen	NPA's'n	170	23	203	52	2 031
St Elizabeth Hospital	Gen	Church	225	20	392	121	5 202
Wabash Valley Sanitarium	Gen	NPA's'n	45	7	15	16	245
William Ross Sanatorium	TB	County	45			36	52
LaPorte 15 755—LaPorte Fairview Hospital	Gen	NPA's'n	28	8	73	20	671
Holy Family Hospital	Gen	Church	90	15	189	65	1 989
Lebanon 6 445—Boone Williams Hospital	Gen	Indiv	22	4	12	5	150
Witham Memorial Hospital	Gen	County	25	5	74	14	553
Linton 5 055—Greene Freeman Greene County Hosp	Gen	County	30	4	No data supplied		
Logansport 18 508—Cass Cass County Hospital	Gen	County	40	6	85	31	1 361
Logansport State Hospital	Ment	State	1 686			1 850	309
St Joseph's Hospital	Gen	Church	60	10	58	27	856
Madison 6 536—Jefferson Kings Daughters Hospital	Gen	NPA's'n	27	6	40	15	638
Marion 24 496—Grant Marion General Hospital	Gen	NPA's'n	50	6	110	25	919
Martinsville 4 062—Morgan Morgan County Memorial Hosp	Gen	County	18	6	38	7	476
Michigan City 26 535—LaPorte Clinic Hospital	Gen	Corp	75	10	81	22	804
St Anthony's Hospital	Gen	Church	100	15	169	32	1 144
Mishawaka 28 630—St Joseph St Joseph Hospital	Gen	Church	100	20	327	46	1 688
Uncle 46 518—Delaware Ball Memorial Hospital	Gen	NPA's'n	142	18	365	102	3 104
New Albany 5 819—Floyd St Edward's Hospital	Gen	Church	100	14	142	37	1 047
Newcastle 14 027—Henry Henry County Hospital	Gen	County	60	8	113	28	1 218
Newcastle 14 027—Henry Newcastle Clinic Hospital	Gen	Corp	15	5	48	7	498
Noblesville 4 811—Hamilton Hamilton County Hospital	Gen	County	30	7	46	15	602
North Madison 573—Jefferson Madison State Hospital	Ment	State	1 550			1 618	290
Oakland 375—Marion Sunny-side Sanatorium	TB	County	261			261	292
Peru 12 750—Miami Dukes Miami County Memorial Hospital	Gen	County	48	12	92	25	623
Wabash Railroad Employees Hospital	Indus	NPA's'n	50			29	510
Plymouth 5 390—Marshall Marshall County Hospital	Gen	NPA's'n	25	6	90	12	672
Portland 5 976—Jay Jay County Hospital	Gen	NPA's'n	15	4	24	10	462
Princeton 7 555—Gibson Methodist Episcopal Hospital	Gen	Church	30	5	90	16	657
Rensselaer 5 056—Jasper Jasper County Hospital	Gen	County	32	8	135	3	965
Richmond 22 492—Wayne Reid Memorial Hospital	Gen	NPA's'n	125	22	259	64	2 941
Richmond State Hospital	Ment	State	1 987			1 340	246
Smith-Estep Memorial Hosp	TB	County	50			23	53
Rochester 3 518—Fulton Woodlawn Hospital	Gen	Indiv	15	4	20	14	584
Rockyville 1 832—Parke Indiana State Sanatorium	TB	State	211			204	184
Rushville 5 709—Rush City Hospital	Gen	City	8	3	24	3	161
Seymour 7 555—Jackson Schneek Memorial Hospital	Gen	NPA's'n	25	4	75	18	590
Shelbyville 10 615—Shelby W S Major Hospital	Gen	City	29	4	36	13	511
South Bend 104 195—St Joseph Epworth Hospital	Gen	NPA's'n	155	37	453	91	2 913
Healthwin Hospital	TB	County	215			204	314
Pennington Sanitarium	N&M	Indiv	18			5	39
St Joseph Hospital	Gen	Church	125	22	308	73	2 251
Sullivan 5 906—Sullivan Mary Sherman Memorial Hosp	Gen	County	50	7	65	26	628

Key to symbols and abbreviations is on page 798

IOWA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Iola Grove 206—Ida	Gen	Part	10	4	10	6	12
Iola Grove General Hospital	Gen	Part	10	4	10	6	12
Independence 3691—Buchanan	Ment	State	1768			1714	300
Independence State Hospital	Gen	NPA's n	26	6	67	8	427
Peoples Hospital	Gen	NPA's n	26	6	67	8	427
Iowa City 10340—Johnson	Unit of Univer	City Hospitals					
Children's Hospital	Unit of Univer	City Hospitals					
Iowa State Psychopathic Hos	Ment	State	60			41	308
pital	Gen	Church	100	16	20	60	1280
Mercy Hospital	Gen	State	900	34	1106	750	18732
University Hospitals	Gen	State	900	34	1106	750	18732
Iowa Falls 4112—Hardin	Gen	City	18	6	38	12	388
Fitzworth Hospital	Gen	City	18	6	38	12	388
Keokuk 10106—Lee	Gen	Corp	60	10	104	42	1706
Graham Protestant Hospital	Gen	Church	120	10	261	60	1840
St Joseph's Hospital	Gen	Church	120	10	261	60	1840
Knoville 4667—Marion	Ment	Vet	50			59	222
Veterans Admin Facility	Ment	Vet	50			59	222
Iake City 2012—Calhoun	Gen	Indiv	20	4	24	6	312
McCrory Hospital	Gen	Part	12	3	20	8	300
McVay Memorial Ho pital	Gen	Part	12	3	20	8	300
Ida Mary 4788—Plymouth	Gen	Church	0	10	50	22	812
Sacred Heart Hospital	Gen	Church	0	10	50	22	812
Manning 1817—Carroll	Gen	Indiv	20	4	20	8	110
Wyatt Memorial Hospital	Gen	Indiv	20	4	20	8	110
Maquoketa 3090—Jackson	Gen	Indiv	20	4	20	8	110
City Memorial Hospital	Gen	Indiv	20	4	20	8	110
Marshalltown 17373—Marshall	Gen	Church	120	10	240	84	2400
Evangelical Deaconess Home	Gen	Church	60	10	77	21	500
and Hospital	Gen	Church	60	10	77	21	500
St Thomas Mercy Hospital	Gen	Church	60	10	77	21	500
Ma on City 23304—Cerro Gorio	Gen	Corp	40	12	121	20	902
Park Hospital	Gen	Church	88	12	220	40	1602
St Joseph's Mercy Hospital	Gen	Part	10	3	17	3	137
Story Hospital	Gen	Part	10	3	17	3	137
McGregor 1299—Clayton	Gen	Indiv	10	3	15	4	116
McGregor Hospital	Gen	Indiv	10	3	15	4	116
Monticello 2200—Jones	Gen	NPA's n	20	0	71	10	300
John McDonald Hospital	Gen	NPA's n	20	0	71	10	300
Mt Pleasant 374—Henry	Ment	State	1600			186	432
Mt Pleasant State Hospital	Ment	State	1600			186	432
Muscantine 1678—Muscantine	Gen	Indiv	30	6	16	10	403
Bellevue Hospital	Gen	Indiv	30	6	16	10	403
Benjamin Hershey Memorial	Gen	NPA's n	50	6	84	19	900
Ho pital	Gen	NPA's n	50	6	84	19	900
Nevada 3133—Story	Gen	Church	40	0	40	16	470
Iowa Sanatorium and Hospital	Gen	Church	40	0	40	16	470
New Hampton 2438—Chickasaw	Gen	Church	31	9	79	19	707
St Joseph's Ho pital	Gen	Church	31	9	79	19	707
Newton 11560—Jasper	Gen	City	44	10	174	26	800
Mary Frances Kilgiff Memorial	Gen	City	44	10	174	26	800
Hospital	Gen	City	44	10	174	26	800
Onkdale 52—Johnson	TB	State	300			307	107
State Sanatorium for Tuber	TB	State	300			307	107
culosis	TB	State	300			307	107
Oelwein 7704—Fayette	Gen	Church	20	0	77	10	349
Mercy Hospital	Gen	Church	20	0	77	10	349
Onawa 2038—Monona	Gen	Indiv	13	2	20	6	243
Onawa Ho pital	Gen	Indiv	13	2	20	6	243
Oceola 2821—Clarke	Gen	Indiv	20	6	29	10	321
Harken Hospital	Gen	Indiv	20	6	29	10	321
Oceola Ho pital	Gen	Indiv	20	6	29	10	321
Oceola Sanatorium and Ho p	Gen	Indiv	10	3	18	0	50
Olney 10127—Maha ka	Gen	Part	30	0	38	14	286
Mercy Hospital	Gen	Part	30	0	38	14	286
Ottumwa 2800—Wapello	Gen	Corp	60	12	219	37	1572
Ottumwa Hospital	Gen	Corp	60	12	219	37	1572
St Joseph Hospital	Gen	Church	50	12	174	40	1306
Sunnyslope Sanatorium	TB	County	100			50	130
Perry 681—Dallas	Gen	NPA's n	20	5		12	
Kings Daughters Hospital	Gen	NPA's n	20	5		12	
Red Oak 177—Montgomery	Gen	Indiv	10	4	27	4	100
Murphy Memorial Hospital	Gen	Indiv	10	4	27	4	100
Sheldon 3000—O'Brien	Gen	Church	20	0	19	0	208
Sheldon Good Samaritan Hosp	Gen	Church	20	0	19	0	208
Shenandoah 600—Page	Gen	NPA's n	20	6	32	10	667
Henry and Catherine Hand	Gen	NPA's n	20	6	32	10	667
Ho pital	Gen	NPA's n	20	6	32	10	667
Shibley 1500—Oceola	Gen	Part	10	4	17	8	300
Oceola Ho pital	Gen	Part	10	4	17	8	300
Shibley Ho pital	Gen	Part	10	4	17	8	300
Sigourney 1000—Keokuk	Gen	Indiv	11	2	7	2	12
Sigourney Hospital	Gen	Indiv	11	2	7	2	12
Sioux City 79184—Woodbury	Gen	Church	10	12	203	47	1649
Lutheran Hospital	Gen	Church	10	12	203	47	1649
Methodist Ho pital	Gen	Church	10	12	203	47	1649
St Joseph's Mercy Hospital	Gen	Church	100	0	222	100	4006
St Vincent's Ho pital	Gen	Church	110	10	276	60	3600
Spencer 61—Clay	Gen	NPA's n	0	0	60	11	00
Spencer Ho pital	Gen	NPA's n	0	0	60	11	00
Toledo 1500—Lama	Gen	NPA's n	0	0	60	11	00
Sac and Fox Tuberculosis San	TB	IA	0	0	2	74	123
atorium	TB	IA	0	0	2	74	123
Vinton 3000—Benton	Gen	City	20	0	2	10	000
Virginia Gay Hospital	Gen	City	20	0	2	10	000
Washington 4514—Washington	Gen	County	0	0	110	16	00
Washington County Hospital	Gen	County	0	0	110	16	00
Waterloo 4010—Black Hawk	Gen	Church	70	0	16	24	1002
Alma Memorial Ho pital	Gen	NPA's n	40	10	210	27	1008
Frederick Ho pital	Gen	Church	80	10	47	02	1009
St Francis Ho pital	Gen	Church	80	10	47	02	1009
Waterloo 4010—Bremer	Gen	Church	0	6	9	18	00
St Joseph Mercy Ho pital	Gen	Church	0	6	9	18	00
West Union 600—Fayette	Gen	City	10	2	14	4	00
West Union Community Ho p	Gen	City	10	2	14	4	00

IOWA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Williamsburg 1209—Iowa	Gen	Indiv	10		10	4	100
Watts Hospital	Gen	Indiv	10		10	4	100
Related Institutions							
Ames 10261—Story	Inst	State	10			12	1000
Iowa State College Hospital	Inst	State	10			12	1000
Anamosa 3079—Jones	Inst	State	40			10	001
Reformatory Hospital	Inst	State	40			10	001
Belmond 173—Wright	Gen	Indiv	8			3	100
Belmond Hospital	Gen	Indiv	8			3	100
Bettendorf 2768—Scott	Conv	Frat	60			40	17
Masonic Sanitarium	Conv	Frat	60			40	17
Burlington 26705—Des Moines	Vent	County	60			60	
Des Moines County Asylum	Vent	County	60			60	
Clarion 2008—Wright	Gen	Part	10			No data supplied	
Tompkins and Walker Hospital	Gen	Part	10			No data supplied	
Council Bluffs 12048—Pottawattamie	Inst	NPA's n	1			0	441
Christian Home Orphanage	Inst	NPA's n	1			0	441
Iowa School for the Deaf in	Inst	State	0			4	38
Armory	Inst	State	0			4	38
Davenport 7001—Scott	Inst	State	44	16		0	1200
Iowa Soldiers Orphan Home	Inst	State	44	16		0	1200
Hospital	Inst	State	44	16		0	1200
Des Moines 1400—Polk	Mat	NPA's n	0	10	18	20	8
Benedict Home	Mat	NPA's n	0	10	18	20	8
Junior League Convalescent	Conv	Corp	16			1	
Home for Children	Conv	Corp	16			1	
Salvation Army Rescue Home	Mat	Church	0	50	101	4	100
and Maternity Hospital	Mat	Church	0	50	101	4	100
Idora 3000—Hardin	Inst	State	20			10	100
Iowa Training School for	Inst	State	20			10	100
Boys Hospital	Inst	State	20			10	100
Elkader 1382—Clayton	Ment	County	44			40	
Clayton County Asylum	Ment	County	44			40	
St Madison 1070—Lee	Inst	State	7			17	011
Iowa State Penitentiary Hosp	Inst	State	7			17	011
Clenwood 4260—Mills	McDe	State	1000			1001	76
Iowa Institution for Feeble	McDe	State	1000			1001	76
minded Children	McDe	State	1000			1001	76
Harlan 314—Shelby	Gen	Indiv	14	6	42	4	60
Harlan Hospital	Gen	Indiv	14	6	42	4	60
Hawarden 2400—Sioux	Gen	Part	8	2	10	0	100
Hawarden Hospital	Gen	Part	8	2	10	0	100
Indianola 2488—Warren	Gen	Indiv	6	0	12	1	40
Community Hospital	Gen	Indiv	6	0	12	1	40
Manchester 041—Delaware	Gen	Indiv	7	2	20	3	82
Kocher Hospital	Gen	Indiv	7	2	20	3	82
Marshalltown 17373—Marshall	Inst	State	200			120	
Iowa Soldiers Home Hospital	Inst	State	200			120	
Odelbalt 1388—Sae	Gen	Indiv	9	3	6	3	06
Odelbalt Hospital	Gen	Indiv	9	3	6	3	06
Orange City 1727—Sioux	Gen	Indiv	10	1		0	107
De Brey Hospital	Gen	Indiv	10	1		0	107
Doornink Hospital	Gen	Indiv	10	2	8	0	170
Osage 2064—Mitchell	Gen	City	8	0	16	3	100
Ni on Hospital	Gen	City	8	0	16	3	100
Postville 1000—Allamakee	Gen	Corp	10	1	10	6	107
Postville Community Hospital	Gen	Corp	10	1	10	6	107
Red Oak 778—Montgomery	McDe	Part	40			40	9
Powell School for Backward	McDe	Part	40			40	9
and Nervous Children	McDe	Part	40			40	9
Sac City 2804—Sae	Gen	Indiv	10	3	18	5	33
Sac City Hospital	Gen	Indiv	10	3	18	5	33
Sioux City 79183—Woodbury	Mat	NPA's n	40	7	11	20	60
Florence Crittenton Home	Mat	NPA's n	40	7	11	20	60
Toledo 1500—Lama	Inst	State	0			11	024
State Juvenile Home Hospital	Inst	State	0			11	024
Waukon 200—Allamakee	Mat	Indiv	8	6	2	2	04
Hall Hospital	Mat	Indiv	8	6	2	2	04
Rominger and Jeffries Emer	Gen	Part	8			2	84
gency Hospital	Gen	Part	8			2	84
Winterset 2021—Madison	Gen	Indiv	14	0	00	8	00
Winterset Hospital	Gen	Indiv	14	0	00	8	00
Woodward 901—Dallas	McDe	State	100			100	100
Hospital for Epileptics and	McDe	State	100			100	100
School for Feeble-minded	McDe	State	100			100	100

Summary for Iowa

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	124	10,056	12,440	127,280
Related institutions	34	4,100	3,090	10,604
Totals	158	14,156	15,530	137,884
Refused registration	0	0	0	0

KANSAS

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Abilene 600—Dickinson	Gen	NPA's n	20	4	48	11	400
Dickinson County Memorial	Gen	NPA's n	20	4	48	11	400
Hospital	Gen	NPA's n	20	4	48	11	400
Anthony 2947—Harper	Gen	Indiv	20	7	10	0	1140
Galloway Ho pital	Gen	Indiv	20	7	10	0	1140
Arkansas City 13046—Cowley	Gen	NPA's n	40	7	10	10	70
Mercy Ho pital	Gen	NPA's n	40	7	10	10	70
Stricklen Ho pital	Gen	Indiv	20	0	12	0	208
Atchison 17024—Atchison	Gen	NPA's n	22	8	00	14	21
Atchison Hospital	Gen	NPA's n	22	8	00	14	21

KANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassinetts	Number of Births	Average Patients	Patients Admitted
Augusta 4 033—Butler	Gen	Indiv	10	3	13	6	149
Augusta Hospital							
Belleville 2 383—Republic	Gen	Church	20	5	19	11	230
R G Patterson Memorial Hosp							
Beloit 3 502—Mitchell	Gen	NP Assn	50	10	86	24	932
Community Hospital							
Chanute 10 277—Neosho	Gen	Corp	50	6	40	23	910
Johnson Hospital							
Coffeyville 16 103—Montgomery	Gen	NP Assn	18	3	37	8	427
Southeast Kansas Hospital							
Columbus 3 233—Cherokee	Gen	City	16	2	6	6	237
Maude Norton Memorial City Hospital							
Concordia 5 792—Cloud	Gen	Church	75	10	70	43	1 324
St Joseph's Hospital							
Dodge City 10 033—Ford	Gen	Church	82	14	111	49	1 820
St Anthony Hospital							
Eldorado 10 311—Butler	Gen	NP Assn	43	7	193	27	1 028
Susan B Allen Memorial Hospital							
Elkhart 1 435—Morton	Gen	Indiv	20	3	No data supplied		
Trucker Hospital							
Ellsworth 2 072—J Hs worth	Gen	NP Assn	35	5	74	20	726
Ellsworth Hospital							
Lmporia 14 067—Lyons	Gen	County	66	14	134	37	1 103
Newman Memorial County Hospital							
St Mary's Hospital	Gen	Church	75	12			
Ft Leavenworth 5 023—Leavenworth	Gen	Army	100	6	64	CS	2 469
Station Hospital							
Tt Riley 2 610—Geary	Gen	Army	251	8	74	124	2 644
Station Hospital							
Tt Scott 10 763—Bourbon	Gen	Church	100	10	128	83	2 326
Mercy Hospital							
Garden City 6 121—Tunney	Gen	Church	41	9	103	26	1 069
St Catherine's Hospital							
Cirard 2 442—Crawford	Gen	City	14	2	21	7	243
Girard General Hospital							
Goessel 116—Marion	Gen	Church	14	5	42	9	264
Menonite Bethesda Hospital							
Goodland 3 626—Sherman	Gen	Church	22	3	49	9	332
Boothroy Memorial Hospital							
Great Bend 5 548—Barton	Gen	Church	70	13	231	61	1 327
St Rose Hospital							
Halstead 1 313—Harvey	Gen	Church	170	8	49	76	2 306
Halstead Hospital							
Hays 4 618—Ellis	Gen	Church	38	5	37	14	391
Hays Protestant Hospital							
St Anthony's Hospital	Gen	Church	100	22	196	80	2 012
Holsington 3 001—Barton	Gen	Indiv	15	2	No data supplied		
Atkin Hospital							
Horton 4 049—Brown	Gen	Corp	15	6	133	10	642
Horton Hospital							
Hutchinson 27 033—Reno	Gen	Church	90	18	494	64	2 592
Grace Hospital							
St Elizabeth Mercy Hospital	Gen	Church	60	12	231	28	893
Independence 12 782—Montgomery	Gen	Church	80	5	53	24	733
Mercy Hospital							
Junction City 7 407—Geary	Gen	City	34	12	69	16	723
Junction City Municipal Hosp							
Kansas City 121 837—Wyandotte	Gen	State	223	22	403	180	5 274
Bell Memorial Hospital	Gen	Church	120	23	289	75	2 371
Bethany Methodist Hospital	Gen	Church	25	2	No data supplied		
Douglass Hospital (col)	Cen	Indiv	38			18	167
Grandview Sanitarium	N&M	Indiv	100	18	197	79	1 967
Providence Hospital	Gen	Church	200	20	294	123	3 367
St Margaret's Hospital	Gen						
Larned 3 532—Pawnee	Gen	NP Assn	13	3	63	5	330
Larned City Hospital							
Larned State Hospital	Ment	State	1 048			1 023	266
Lawrence 13 726—Douglas	Gen	City	52	10	200	18	1 091
Lawrence Memorial Hospital							
Leavenworth 17 466—Leavenworth	Gen	NP Assn	53	10	90	19	661
Cushing Memorial Hospital	Gen	Church	63	10	73	33	896
St John's Hospital							
Liberal 5 294—Seward	Gen	Church	42	9	42	12	474
Ipworth Hospital							
Lyons 2 939—Rice	Gen	NP Assn	20	6	127	9	487
Lyons Hospital							
Manhattan 10 136—Riley	Gen	NP Assn	33	8	53	12	333
Charlotte Swift Memorial Hospital							
Marvsville 4 013—Marshall	Gen	Indiv	12	3	24	5	214
Randall Hospital							
Mulvane 1 042—Sumner	Indus	NP Assn	60			32	431
A T C S F Railway Hosp							
Newton 11 034—Harvey	Gen	Church	51	12	124	29	1 397
Asbell Christian Hospital	Gen	Church	48	12	132	33	848
Bethel Deaconess Hospital							
Norton 2 767—Norton	Gen	Church	20	8	43	9	337
Laird Memorial Hospital							
State Sanatorium for Tuberculosis	TB	State	267			261	203
Oswatimie 4 440—Miami	Ment	State	1 670			1 634	232
Oswatimie State Hospital							
Ottawa 9 363—Franklin	Gen	County	33	12	87	14	573
Ransom Memorial Hospital							
Parsons 14 003—Labette	Gen	Church	33	4	No data supplied		
Mercy Hospital							
M K T Railroad Employees Hospital	Indus	NP Assn	50			20	466
State Hospital for Epileptics	Epil	State	58			808	123
Pittsburg 18 143—Crawford	Gen	Church	75	6	102	41	1 230
St Carmel Hospital							

KANSAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassinetts	Number of Births	Average Patients	Patients Admitted
Pratt 6 322—Pratt	Gen	Corp	18	4	53	17	673
Minnekah Hospital							
Quinter 570—Gove	Gen	Indiv	10	5	38	4	413
Quinter Hospital and Sanit							
Ransom 431—Ness	Gen	Indiv	12	4			330
Mid West Hospital							
Sabetha 2 332—Nemaha	Gen	Church	100	11	93	53	1 607
St Anthony Murdock Memorial Hospital							
Salina 20 153—Saline	Gen	Church	43	10	116	34	1 107
Asbury Protestant Hospital	Gen	Church	53	13	138	23	923
St John's Hospital							
Spearville 703—Ford	Gen	NP Assn	10	5	19	5	233
Perkins Hospital							
Stafford 1 614—Stafford	Gen	Indiv	16	4	23		153
Feldhut Memorial Hospital							
Sterling 1 868—Rice	Gen	NP Assn	20	4	31	8	41
Sterling Hospital							
Syracuse 1 383—Hamilton	Gen	County	23	6	57		333
Donohue Memorial Hospital							
Topeka 64 120—Shawnee	Indus	NP Assn	140			90	3 311
A 1 & S F Railway Hosp	Gen	Church	94	20	107	51	1 529
Hillcrest Sanatorium	IB	City	60			49	131
Juno C Stormont Hospital	Gen	NP Assn	73	13	334	61	1 579
Menninger Sanitarium	N&M	Corp	50			31	150
St Francis Hospital	Gen	Church	73	12	183	30	1 110
Security Benefit Association Hospital	Gen	Trat	230			1 111	914
Topeka State Hospital	Ment	State	1 527			1 549	230
Veterans Administration Home	Gen	Vet	741			549	423
Veterans Admin Facility							
Wamego 1 647—Pottawatomie	Gen	City	15	4	29	5	139
Genn Hospital							
Wellington 7 403—Sumner	Gen	NP Assn	30	5	31	5	311
Hatcher Hospital	Gen	NP Assn	23	8	66	8	517
St Luke's Hospital							
Wichita 111 110—Sedgwick	Gen	Indiv	15	2	12	5	309
Coffman Hospital	Gen	Church	275	25	490	140	4 129
St Francis Hospital	Gen	County	70	4	30	54	909
Sedgwick County Hospital	Gen	Vet	179			131	123
Veterans Admin Facility	Gen	Church	202	24	409	133	3 381
Wesley Hospital	Gen	Church	100	13	270	35	2 177
Wichita Hospital							
Winfield 9 393—Cowley	Gen	Church	50	6	71	30	90
St Mary's Hospital							
William Newton Memorial Hospital	Gen	City	42	10	132	29	1 040
Related Institutions							
Ashland 1 232—Clark	Gen	Corp	19	4	44	3	230
Ashland Hospital							
Atchison 13 024—Atchison	N&M	Indiv	22			13	41
Prospect Park Sanitarium							
Burlington 2 273—Coffey	Gen	Indiv	13	3	10	3	174
Burlington Hospital							
Ellsworth 2 072—J Hs worth	Inst	State	33			22	41
Mother Bickerdick Home and Hospital							
Ft Dodge 515—Ford	Inst	State	36			10	293
Kansas State Soldiers Home							
Ft Leavenworth 5 023—Leavenworth	Inst	State	173			112	1 409
U S Penitentiary Annex Hosp	In t	Fed	73			20	3
Lansing 812—Leavenworth	Inst	State	53			23	410
Asylum for Dangerous Insane	Ment	State	73			10	493
Kansas State Penitentiary Hosp	Inst	State	46			16	1 914
Lawrence 13 726—Douglas	Inst	IA	40			10	493
Haskell Institute Hospital	Inst	State	46			16	1 914
Watkins Memorial Hospital							
Leavenworth 17 466—Leavenworth	N&M	Indiv	30			No data supplied	
Evergreen Sanitarium	In t	Fed	180			116	1 531
U S Penitentiary Hospital							
Lebanon 723—Smith	Gen	Indiv	10	2	4		60
Lebanon Hospital							
Lincoln 1 732—Lincoln	Gen	Indiv	8	1	10	3	133
City Hospital							
Little River 618—Rice	Gen	City	18	2	5	3	93
Hoffman Memorial Hospital							
Manhattan 10 136—Riley	Inst	State	30			1	314
Kansas State College Hosp							
Marysville 4 013—Marshall	Gen	Indiv	10	2	10	3	160
Marysville Hospital							
Nashville 234—Kingman	Gen	Indiv	9	1	14	2	137
Nashville Hospital							
Norwich 477—Kingman	Gen	Indiv	7	2	7	4	253
Norwich Hospital							
Olathe 3 656—Johnson	In t	State	18			1	333
State School for the Deaf							
Scott City 1 544—Scott	Gen	Indiv	9	4	26	9	169
Scott City Hospital							
Topeka 64 120—Shawnee	Mat	NP Assn	18	12	26	14	31
Florence Crittenton Home							
Nellie Johns Memorial Hosp (col)	Inst	State	20				
State Industrial School for Boys	Inst	State	24			9	233
Wichita 111 110—Sedgwick	Mat	Church	70	19	80	4	93
Salvation Army Home and Hospital							
Sedgwick County Tuberculosis Sanitarium	TB	County	60			59	67

Key to symbols and abbreviations is on page 798

KANSAS—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Suburban Rest Sanitarium	Conv	Indiv	30			10	120
Wichita Children's Home Hosp	Inst	NPA's n	25			8	200
Winfield 9388—Cowley							
State Training School	McDe	State	1 994			1 033	150
Summary for Kansas	Number	Beds	Average Patients	Patients Admitted			
Hospitals and sanatoriums	62	11 866	9 148	94 692			
Related institutions	32	2 392	1 564	9 132			
Totals	124	14 258	10 712	103 824			
Refused registration	52	136					

KENTUCKY

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Anchorage 564—Jefferson	N&M	Indiv	50			3	78
Hord Sanatorium							
Ashland 29 074—Boyd	Gen	Indiv	70	2	23	25	
Grace Memorial Hospital	Gen	NPA's n	70	8	177	23	1 226
Kings Daughters Hospital							
Berea 1 827—Madison	Gen	NPA's n	50	5	30	33	2 730
Berea College Hospital							
Beverly 69—Bell	Gen	Church	15	5	9	4	100
Red Bird Evangelical Hospital							
Bowling Green 12 448—Warren	Gen	City	52	8		10	
City Hospital							
Carlisle 1 469—Nicholas	Gen	County	11	2	25		212
Johnson Memorial Hospital							
Covington 63 02—Kenton	Gen	Church	309	32	767	202	4 165
St Elizabeth Hospital							
Cynthiana 4 386—Harrison	Gen	NPA's n	35	6	30	16	331
Harrison Memorial Hospital							
Danville 6 729—Boyle	Gen	CyCo	50	5		15	
Danville and Boyle County Hos							
pital							
Dayton, 9 071—Campbell	Gen	County	100	10	225	60	2 211
Speer's Memorial Hospital							
Itt Knox 500—Hardin	Gen	Army	200	3	23	101	3 020
Station Hospital							
Ft Thomas (Newport P O)—Campbell	Gen	Army	100		5	30	200
Station Hospital							
Frankfort 11 676—Franklin	Gen	NPA's n	30	5	69	20	841
Kings Daughters Hospital							
Frenchburg 246—Menifee	Gen	Church	16	1		4	
Frenchburg Hospital							
Georgetown 4 229—Scott	Gen	CyCo	23	6	50	16	550
John Graves Ford Memorial							
Hospital							
Glasgow 042—Barren	Gen	NPA's n	51	8	42	22	1 368
T J Samson Community Hosp							
Harlan 4 327—Harlan	Gen	Corp	50	6	No data supplied		
Harlan Hospital							
Harrodsburg 4 073—Mercer	Gen	NPA's n	20	5	10	8	270
A D Price Memorial Hospital							
Hazard 7 021—Perry	Gen	Corp	70	8	26	33	1 873
Hazard Hospital							
Hurst Snyder Hospital	Gen	Corp	25	2	20	7	250
Henderson 663—Henderson	Gen	NPA's n	42	5	56	21	900
Henderson Hospital							
Hopkinsville 10 746—Christian	Gen	NPA's n	27	3	24	20	920
Home Stuart Memorial Hosp							
Hydon 313—Leslie	Gen	NPA's n	12	6	32	11	206
Frontier Nursing Service Hos							
pital							
Jack on 2 109—Breathitt	Gen	Indiv	28	2	12	12	832
Bach Hospital							
Jenkins 846—Letcher	Gen	NPA's n	50	10	No data supplied		
Jenkins Ho pital							
Lebanon 3 245—Marion	Gen	Indiv	11	2	10	4	201
Baute Infirmary	Gen	Part	16	6			Reopened
Fitzgeralds Ho pital							
Lexington 45 776—Fayette	Gen	Church	200	16	213	130	4 371
Cood Samaritan Ho pital							
High Oaks Sanatorium	Gen	Indiv	25		18	16	
Julius Marks Sanatorium	IB	County	90		93	116	
St Josephs Hospital	Gen	Church	187	18	239	115	3 513
Shriners Hospital for Crippled							
Children	Orth	Frat	90			10	68
U S Narcotic Farm	Drug	USPHS	1 000			New	
Veterans Admin Facility	Vent	Vet	256			203	641
London 1 906—Laurel	Gen	Corp	50	2	10	12	344
Pennington General Hospital							
Louisville 1 901—Lawrence	Gen	Indiv	10		6	6	224
Louisville General Hospital							
Riverside Ho pital	Gen	Indiv	10		10	5	170
Louisville 29 774—Jefferson	N&M	Indiv	20			8	120
Childrens Free Ho pital	Chil	NPA's n	74			56	1 361
Lowell Ho pital	Gen	NPA's n	86	14	148	46	1 529
Kentucky Baptist Ho pital	Gen	Church	100	20	246	100	3 204
Kentucky Crippled Children Ho p	Orth	NPA's n	77			48	100
Louisville City Ho pital	Gen	City	528	58	1 000	370	10 100
Louisville Neuropathic Sanat	N&M	Corp	24			24	283
Methodist Episcopal Deacones							
Ho pital							
Norton Memorial Infirmary	Gen	Church	117	25	217	72	2 600
Norton Memorial Infirmary	Gen	NPA's n	60	6	10	10	200
Red Cross Ho pital (col)							

KENTUCKY—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
St Anthony's Hospital	Gen	Church	135	22	415	100	2 457
St Joseph Infirmary	Gen	Church	390	30	370	172	5 734
SS Mary and Elizabeth Hosp	Gen	Church	140	20	400	63	3 017
State Tuberculosis Sanatorium	IB	State	80			72	177
Stokes Hospital	N&M	Corp	30			10	130
U S Marine Hospital	Gen	USPHS	135			35	698
Lynch 300—Harlan	Gen	Corp	50	4	48	14	532
Lynch Hospital							
Madisonville 6 908—Hopkins	Gen	Corp	20	3	14	7	489
Madisonville Hospital							
Martin 799—Floyd	Gen	Indiv	50	5		36	
Beaver Valley Hospital							
Mayfield 8 177—Graves	Gen	Corp	30	3	31	7	430
Fuller Gilliam Hospital	Gen	NPA's n	40	2	31	16	672
Mayfield Hospital							
Maysville 6 557—Mason	Gen	NPA's n	40	6	40	10	666
Haywood Hospital							
Middlesboro 10 350—Bell	Gen	Part	50	6	50	21	1 027
Middlesboro Hospital							
Murray 2 891—Calloway	Gen	Part	25	2	13	8	400
Keys Houston Clinic Hospital	Gen	NPA's n	46	6	20	20	546
Wm Mason Memorial Hosp							
Outwood—Christian	IB	Vet	300			286	967
Veterans Admin Facility							
Owensboro 22 765—Davies	Gen	City	97	13	187	40	1 841
Owensboro City Hospital							
Paducah 33 431—McCracken	Unit of Riverside Hospital						
Ewart Purcell Isolation Hosp	Gen	NPA's n	90	2	2	30	1 544
Illinois Central Hospital	Gen	City	115	8	264	32	1 399
Riverside Hospital							
Paintsville 2 411—Johnson	Gen	Corp	50	2	22	31	1 216
Paintsville Hospital							
Paris 6 704—Bourbon	Gen	City	51	4	67	22	600
W W Massie Memorial Hosp							
Pewee Valley 582—Oldham	Gen	NPA's n	30	3	6	12	172
Pewee Valley Sanit and Hosp							
Pikeville 3 366—Pike	Gen	Church	50	5	30	20	1 391
Methodist Hospital							
Pineville 3 567—Bell	Gen	Corp	20	2	20	12	575
Pineville Community Hospital							
Richmond 6 495—Madison	Gen	Indiv	20		2	100	
Gibson Hospital							
Pattie A Clay Infirmary	Gen	NPA's n	40	4	40	24	802
U S Public Health Service							
Trachoma Hospital	Irach	FedState	38			36	
Shelbyville 4 033—Shelby	Gen	NPA's n	30	5	58	12	490
Kings Daughters Hospital							
Somerset 5 066—Pulaski	Gen	Corp	20	2	18	5	363
Somerset General Hospital							
Versailles 2 244—Woodford	Gen	CyCo	22	4	48	12	400
Woodford Memorial Hospital							
Waverly Hills—Jefferson	IB	CyCo	204			207	468
Waverly Hills Sanatorium							
Winchester 8 233—Clark	Gen	NPA's n	30	5	21	8	496
Clark County Hospital							
Guerrant Clinic and Hospital	Gen	NPA's n	20	3		10	191
Related Institutions							
Barbourville 2 780—Knox	Gen	Indiv	12	2	12	4	150
Logan Hospital							
Fleming 1 389—Letcher	Indus	Corp	20		8	6	365
Fleming Hospital							
Florence 400—Boone	Gen	Indiv	20	2		5	20
Highway Medical Hospital							
Frankfort 11 626—Franklin	Inst	State	100			36	
Kentucky State Reformatory							
Hospital							
State Institution for the Feeble	McDe	State	843			843	60
mindred							
Fulton 3 502—Fulton	Gen	Corp	14	2	31	4	247
Fulton Hospital							
Grayson 1 692—Carter	Gen	Corp	10	1	4	5	108
J Q Stovall Memorial Hosp							
Guerrant 27—Breathitt	Gen	Church	9	1	1		96
Highland Institution Ho pital							
Hopkinsville 10 746—Christian	Ment	State	1 910			1 910	586
Western State Hospital							
Lakeland 50—Jefferson	Ment	State	2 390			2 390	582
Central State Hospital							
Lexington 4 736—Fayette	Ment	State	1 870			1 896	721
Eastern State Hospital							
Louisville 307 740—Jefferson	Inc	NPA's n	96			67	10
Kings Daughters Home for In	N&M	Church	30			No data supplied	
curables							
Mt St Agnes Sanitarium							
Susan Speed Davis Home and	MatCh	Church	36	28	66	43	80
Ho pital							
Princeton 4 764—Caldwell	Gen	NPA's n	70	6	50		
Princeton Hospital							
Shelbyville 4 033—Shelby	Inst	Frat	20			5	21
Old Mans Home of Kentucky							
Hospital							
Smiths Grove 718—Warren	Gen	Indiv	12	1			32
Lacy T Owen Ho pital							
Summary for Kentucky	Number	Beds	Average Patients	Patients Admitted			
Hospitals and sanatoriums	81	7 100	4 737	88 727			
Related institutions	19	7 320	7 283	5 090			
Totals	100	14 420	11 670	93 822			
Refused registration	10	103					

LOUISIANA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassineets	Number of Births	Average Patients	Patients Admitted
Alexandria 2 02—Rapides	Gen	Church	2	0	164	21	1 234
Baptist Hospital	Gen	Vet	4	0	402	402	1 611
Veterans Admin Facility	Gen	Army	100	4	42	58	1 600
Birchdale Field—Bossier	Gen	Army	100	4	42	58	1 600
Station Hospital	Gen	Army	100	4	42	58	1 600
Bishop 5121—Morehouse	Gen	Indiv	2	0	22	0	316
Bastrop General Hospital	Gen	Indiv	2	0	22	0	316
Baton Rouge 30 729—East Baton Rouge	Gen	Indiv	2	0	22	0	316
Baton Rouge General Hosp	Gen	NPA's n	60	6	18	44	1 958
Our Lady of the Lake Sanit	Gen	Church	100	10	294	0	3 070
Bogalusa 14 029—Washington	Gen	Church	100	10	294	0	3 070
Elizabeth Sullivan Memorial Hospital	Gen	Corp	54	12	248	84	4 282
Cirville 208—Iberville	Gen	Corp	54	12	248	84	4 282
U S Marine Hospital	Gen	USPHS	42	0	0	0	60
Converse 291—Sabine	Gen	Indiv	28	11	0	11	681
Allen Sanitarium	Gen	Indiv	28	11	0	11	681
Covington 3 208—St James	Gen	Indiv	64	0	0	13	169
New Fenwick Sanitarium	Gen	Indiv	64	0	0	13	169
Crowley, 7 656—Acadia	Gen	NPA's n	20	0	40	0	784
Crowley Sanitarium	Gen	NPA's n	20	0	40	0	784
De Ridder 737—Beauregard	Gen	Corp	16	2	2	2	240
De Ridder Sanitarium	Gen	Corp	16	2	2	2	240
Ferriday 2 502—Concordia	Gen	Part	10	2	24	4	213
Ferriday Hospital	Gen	Part	10	2	24	4	213
Haynesville Hospital	Gen	Corp	0	0	11	0	204
Jackson 3 966—East Feliciana	Gen	State	6	0	4	0	706
Fast Louisiana State Ho p	Gen	State	6	0	4	0	706
Parker Hospital	Gen	State	6	0	4	0	706
I Lafayette 14 63—Lafayette	Gen	Corp	2	2	4	0	367
Lafayette Sanitarium	Gen	Corp	2	2	4	0	367
St John Hospital	Gen	Corp	2	2	4	0	367
Lake Charles 15 791—Calcasieu	Gen	Church	0	8	100	0	2 172
St Patrick's Hospital	Gen	Church	0	8	100	0	2 172
Lecompte 1 247—Rapides	Gen	Part	21	2	0	7	500
Lecompte Sanitarium	Gen	Part	21	2	0	7	500
Mansfield 3 837—De Soto	Gen	NPA's n	2	2	1	6	1
Mansfield Sanitarium	Gen	NPA's n	2	2	1	6	1
Minden 5 623—Webster	Gen	Corp	0	2	0	7	491
Minden Sanitarium	Gen	Corp	0	2	0	7	491
Monroe 26 029—Ouachita	Gen	Indiv	0	4	0	8	406
Riverside Sanitarium	Gen	Church	12	1	200	0	2 763
St Francis Sanitarium	Gen	Church	12	1	200	0	2 763
Vaughan Wright Bendel Clinic	Gen	Part	0	4	0	13	896
Natchitoches 4 347—Natchitoches	Gen	NPA's n	20	0	0	0	supplied
Natchitoches Hospital	Gen	NPA's n	20	0	0	0	supplied
New Iberia 8 60—Lafayette	Gen	Indiv	20	2	2	10	419
Danvers Hospital	Gen	Indiv	20	2	2	10	419
Iberia General Hospital	Gen	Indiv	20	2	2	10	419
New Orleans 458 762—Orleans	Gen	State	1 114	0	0	0	67 92
Charity Hospital**	Gen	State	1 114	0	0	0	67 92
City Hospital for Mental Diseases	Gen	City	100	0	0	0	420
Delgado Memorial Hospital	Gen	Unit of Charity	100	0	0	0	420
De Paul Sanitarium	Gen	N&M Church	20	0	0	2	202
Eye Ear Nose and Throat Hospital	Gen	NPA's n	74	0	0	10	243
Flint Coddridge Hospital of Dillard University (col)*	Gen	NPA's n	88	12	196	1	1 259
French Hospital	Gen	Part	62	13	147	2	967
Hotel Dieu Hospital*	Gen	Church	230	2	48	139	6 081
Illinois Central Hospital	Gen	NPA's n	60	0	0	26	809
John Dillert Memorial Tuberculosis Hospital	Gen	Unit of Charity	0	0	0	0	supplied
Mercy Hospital Sonlat Memorial*	Gen	Church	118	2	0	10	2 88
New Orleans Hospital and Dispensary for Women and Children	Gen	NPA's n	34	12	390	40	1 394
Richard Miliken Memorial Hospital	Gen	Unit of Charity	0	0	0	0	supplied
Southern Baptist Hospital*	Gen	Church	196	24	464	104	7 104
Touro Infirmary**	Gen	NPA's n	28	44	64	212	7 407
U S Marine Hospital*	Gen	USPHS	42	0	0	0	60
Opelousas 6 299—St Landry	Gen	Part	20	0	18	0	supplied
St Rita's Infirmary	Gen	Part	20	0	18	0	supplied
Pineville 3 612—Rapides	Gen	State	0	0	0	0	supplied
Central Louisiana State Ho p	Gen	State	0	0	0	0	supplied
Plaquemine 1 124—Iberville	Gen	Corp	0	7	22	8	962
Plaquemine Sanitarium	Gen	Corp	0	7	22	8	962
Ruston 4 400—Lincoln	Gen	NPA's n	0	2	0	0	supplied
Ruston Lincoln Sanitarium	Gen	NPA's n	0	2	0	0	supplied
Shreveport 76 85—Caddo	Gen	NPA's n	100	9	17	10	47
Gowen Sanitarium	Gen	NPA's n	100	9	17	10	47
Highland Sanitarium	Gen	NPA's n	100	10	1	2	1 700
North Louisiana Sanitarium	Gen	NPA's n	100	10	1	2	1 700
Pine Sanitarium	Gen	NPA's n	100	10	1	2	1 700
T E Schumpert Memorial Sanitarium*	Gen	Church	100	12	214	10	2 887
Shreveport Charity Ho pital*	Gen	State	800	45	1 202	144	18 291
Shriners Ho pital for Crippled Children	Gen	Orth	60	10	1	50	1 77
Tri State Hospital	Gen	Corp	100	10	1	50	1 77
Winnboro 1 000—Franklin	Gen	Corp	2	1	0	0	supplied
Winnboro Sanitarium	Gen	Corp	2	1	0	0	supplied

Related Institutions

Alexandria 2 02—Rapides	MeDe	State	600	0	0	0	supplied
State Colony and Training School	MeDe	State	600	0	0	0	supplied
Angola 18—West Feliciana	Inst	State	20	0	0	11	176
Louisiana State Penitentiary Hospital	Inst	State	20	0	0	11	176

LOUISIANA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Bassineets	Number of Births	Average Patients	Patients Admitted
Breaux Bridge 1 399—Saint Martin	Gen	Indiv	10	1	2	0	141
St Paul Hospital	Gen	Indiv	10	1	2	0	141
Elizabeth 3 000—Allen	Gen	Indiv	10	1	2	0	141
Industrial Lumber Company Hospital	Indus	NPA's n	18	2	0	0	141
Lunice 3 597—St Landry	Gen	Corp	14	1	0	3	supplied
Lunice Clinic and Hospital	Gen	Corp	14	1	0	3	supplied
New Orleans 458 762—Orleans	Gen	Corp	14	1	0	3	supplied
New Orleans Convalescent Home	Conv	NPA's n	0	0	0	0	supplied
New Orleans Home for Incurables	Inc	NPA's n	12	0	0	10	22
Orleans Tuberculosis Hospital	Inc	NPA's n	100	0	0	40	16
Opelousas 6 299—St Landry	Gen	Indiv	15	1	18	6	81
St Landry Sanitarium	Gen	Indiv	15	1	18	6	81

Summary for Louisiana

	Number	Beds	Average Patients	Patient Admitted
Hospitals and sanatoriums	4	13 010	11 608	166 910
Related institutions	9	947	7	1 12
Totals	13	13 957	12 81	1 682
Refused registration	2	2	2	2

MAINE

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassineets	Number of Births	Average Patients	Patients Admitted
Augusta 17 198—Kennebec	Gen	NPA's n	70	12	160	4	116
Augusta General Hospital	Gen	NPA's n	70	12	160	4	116
Augusta State Hospital	Gen	NPA's n	70	12	160	4	116
Veterans Admin Facility	Gen	Vet	277	0	0	21	1
Bangor 28 749—Penobscot	Gen	NPA's n	0	0	0	1010	0
Bangor Sanitarium	Gen	NPA's n	0	0	0	1010	0
Bangor State Hospital	Gen	NPA's n	0	0	0	1010	0
Eastern Maine General Hospital	Gen	NPA's n	10	14	84	18	50
Palme Private Hospital	Gen	Indiv	2	0	6	9	1
Bar Harbor 4 486—Hancock	Gen	NPA's n	0	6	80	0	supplied
Mount Desert Island Hospital	Gen	NPA's n	0	6	80	0	supplied
Bar Mills 165—York	Gen	Indiv	12	2	0	0	supplied
Buxton Holms Hospital	Gen	Indiv	12	2	0	0	supplied
Beth 9 110—Sagadahoc	Gen	NPA's n	50	10	0	2	0
Bath Memorial Hospital	Gen	NPA's n	50	10	0	2	0
Belfast 4 993—Waldo	Gen	NPA's n	32	0	12	8	1
Bradbury Memorial Hospital	Gen	NPA's n	32	0	12	8	1
Waldo County General Hosp	Gen	NPA's n	32	0	12	8	1
Biddeford 17 633—York	Gen	Corp	40	10	100	20	1
Trull Hospital	Gen	Corp	40	10	100	20	1
Webber Hospital	Gen	NPA's n	50	10	20	38	1 21
Blue Hill 1 433—Hancock	Gen	NPA's n	20	8	44	0	supplied
Blue Hill Memorial Hospital	Gen	NPA's n	20	8	44	0	supplied
Boothbay Harbor 2 076—Lincoln	Gen	Corp	20	4	0	2	161
St Andrews Hospital	Gen	Corp	20	4	0	2	161
Brunswick 6 144—Cumberland	Gen	Indiv	46	6	0	2	0
Brunswick Hospital	Gen	Indiv	46	6	0	2	0
Calais 5 470—Washington	Gen	Indiv	0	0	87	0	supplied
Calais Hospital	Gen	Indiv	0	0	87	0	supplied
Cape Cottage, 3—Cumberland	Gen	Army	60	0	0	50	111
Station Hospital	Gen	Army	60	0	0	50	111
Caribou 7 248—Aroostook	Gen	City	40	10	80	21	64
Cary Memorial Hospital	Gen	City	40	10	80	21	64
Croft 726—Hancock	Gen	NPA's n	12	6	20	8	200
Croft Community Hospital	Gen	NPA's n	12	6	20	8	200
Ellsworth 5 57—Hancock	Gen	Corp	17	0	24	7	710
Hurley Private Hospital	Gen	Corp	17	0	24	7	710
Fairfield 3 29—Somerset	Gen	State	156	0	0	141	214
Central Maine Sanitarium	Gen	State	156	0	0	141	214
Franklin 1 737—Franklin	Gen	NPA's n	49	10	74	19	67
Franklin County Memorial Hospital	Gen	NPA's n	49	10	74	19	67
Ft Fairfield 2 616—Aroostook	Gen	Corp	18	6	0	7	490
Ft Fairfield Clinic	Gen	Corp	18	6	0	7	490
Gardner 5 609—Kennebec	Gen	NPA's n	40	12	100	20	0
Gardner General Hospital	Gen	NPA's n	40	12	100	20	0
Greenville Junction 34—Piscataquis	Gen	NPA's n	23	0	21	6	0
Charles A Dean Hospital	Gen	NPA's n	23	0	21	6	0
Greenwood Mountain—Oxford	Gen	State	100	0	0	14	1 0
Western Maine Sanitarium	Gen	State	100	0	0	14	1 0
Houlton 6 56—Aroostook	Gen	Corp	40	10	91	2	0
Aroostook Hospital	Gen	Corp	40	10	91	2	0
Madigan Memorial Hospital	Gen	Church	33	7	67	18	0
Lewiston 34 948—Androscoggin	Gen	NPA's n	170	28	400	141	0 54
Central Maine General Hosp	Gen	NPA's n	170	28	400	141	0 54
St Mary's General Hosp	Gen	Church	100	12	100	96	2 0
Portland 70 810—Cumberland	Gen	City	100	16	16	62	4
Children's Hospital	Gen	City	100	16	16	62	4
Furrington Ho pital	Gen	City	100	16	16	62	4
Dr Leighton's Private Hosp	Gen	Indiv	12	12	82	8	0 20
Maine Eye and Ear Infirmary	Gen	NPA's n	110	20	250	70	0 20
Maine General Hospital	Gen	NPA's n	200	27	400	20	0 20
Queen's Hospital	Gen	Church	45	12	93	20	1 0
St Barnabas Hospital	Gen	Indiv	65	10	93	40	1 02
State Street Ho pital	Gen	Corp	50	12	77	46	50
U S Marine Hospital	Gen	USPHS	72	0	0	0	0
Presque Isle 4 662—Aroostook	Gen	State	110	30	10	112	1 0
Northern Maine Sanitarium	Gen	NPA's n	30	10	80	23	1 0
Pre que Isle General Hospital	Gen	NPA's n	30	10	80	23	1 0
Rockland 9 075—Knox	Gen	NPA's n	66	7	60	20	0
Knox County General Ho p	Gen	NPA's n	66	7	60	20	0

MAINE—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Rumford 10 340—Oxford	Gen	NPA's n	78	8	140	27	978
Rumford Community Hosp	Gen	NPA's n	50	8	51	20	796
Sanford 13 392—York	Gen	NPA's n	50	8	51	20	796
Hennietta D Goodall Hospital	Gen	NPA's n	50	8	51	20	796
Skowhegan 6 433—Somerset	Gen	Indiv	37	3	18	13	330
Hennebec Valley Ho pital	Gen	Indiv	37	3	18	13	330
Waterville 10 454—Hennebec	Gen	Indiv	37	3	18	13	330
Ilm City Ho pital	Gen	Church	30	10	91	49	1 879
Sisters Ho pital	Gen	Corp	30	10	91	49	1 879
Phayer Ho pital	Gen	Corp	30	10	91	49	1 879
Westbrook 10 80—Cumberland	Gen	Corp	18	6	38	5	68
Westbrook Hospital	Gen	Corp	18	6	38	5	68
York Village 1 250—York	Gen	NPA's n	70	7	60	9	31
York Hospital	Gen	NPA's n	70	7	60	9	31
Related Institutions							
Auburn 18 011—Androscoggin	Gen	Indiv	10	6	30	3	63
Auburn Private Hospital	Gen	Indiv	10	6	30	3	63
Bangor 28 749—Penobscot	Gen	Indiv	12	2	6	5	70
Friendship Hospital	Gen	Indiv	12	2	6	5	70
May Private Hospital	Gen	Indiv	12	2	6	5	70
Laura Purcell Hospital	Gen	Indiv	12	2	6	5	70
Stin on Private Hospital	Gen	Indiv	12	2	6	5	70
Bridgton 2 600—Cumberland	Gen	NPA's n	4	1	1	1	38
Northern Cumberland Memo	Gen	NPA's n	4	1	1	1	38
rial Hospital	Gen	NPA's n	4	1	1	1	38
1agle Lake 1 750—Aroostook	Gen	Church	2	2	440	2	440
Northern Maine General Hosp	Gen	Church	2	2	440	2	440
1ust Parsonfield 13—York	Conv	Indiv	10	20	20	20	20
Restland	Conv	Indiv	10	20	20	20	20
Millinocket 5 870—Penobscot	Gen	Indiv	7	3	1	1	272
Bryant Ho pital	Gen	Indiv	7	3	1	1	272
Portland 10 810—Cumberland	Conv	Indiv	14	8	31	8	31
Dr C P Westcott Sanatorium	Conv	Indiv	14	8	31	8	31
1ownal 462—Cumberland	McDe	State	820	94	27	94	27
Pownal State School	McDe	State	820	94	27	94	27
Strong 848—Franklin	Surg	Indiv	1	2	10	10	300
Dr Bell's Private Ho pital	Surg	Indiv	1	2	10	10	300
1ulton 1 000—Knox	N&M	Corp	70	10	12	10	12
Jones Sanitarium	N&M	Corp	70	10	12	10	12
Summary for Maine							
Ho pitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	16	1 846	4 711	48 839			
	16	1 099	910	2 300			
Totals	68	1 045	5 621	51 139			
Refu ed registration	6	113					

MARYLAND

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Aberdeen Proving Ground 210—Harford	Gen	Army	12				147
Station Hospital	Gen	Army	12				147
Annapolis 19 51—Anne Arundel	Gen	State	8	10	240	41	1 840
Annapolis Emergency Hospital	Gen	State	8	10	240	41	1 840
U S Naval Ho pital	Gen	Navy	24			68	1 631
Baltimore 804 874—Baltimore City	Gen	City	1 100	90	1 76	1 102	6 384
Baltimore City Hospitals**	Gen	City	1 100	90	1 76	1 102	6 384
Baltimore City Psychopathic Hospital	Unit of Baltimore City Hospitals						
Baltimore City Tuberculosis Hospital	Unit of Baltimore City Ho pitals						
Baltimore City Far and Throat Charity Hospital	FNT	NPA's n	60			7	1 300
Bon Secours Hospital**	Gen	Church	120	20	451	74	2 389
Children's Hospital School	Orth	NPA's n	190			90	252
Church Home and Infirmary**	Gen	Church	162	22	271	91	2 750
Franklin Square Ho pital**	Gen	NPA's n	114	10	387	16	1 676
Good Shepherd General Hospital (col)	Gen	Indiv	38	3	7	28	169
Cundry Sanitarium	N&M	Indiv	40			38	
Ho pital for Women**	Gen	NPA's n	111	23	446	51	2 100
Howard A Kelly Hospital	SkCa	Corp	27			7	52
James Lawrence Kernan Ho pital and Industrial School for Crippled Children	Orth	NPA's n	80			0	19
Johns Hopkins Ho pital**	Gen	NPA's n	50	71	1 76	600	14 391
Johnston Memorial Children's Ho pital	Children - Unit of Union Memorial Hosp						
Maryland General Ho pital**	Gen	Church	225	29	62	171	4 060
Mercy Ho pital**	Gen	Church	200	20	93	200	6 450
Mt Hope Retreat	N&M	Church	600			20	116
Hippie Psychiatric Clinic	P psychiatric Unit of Johns Hopkins Ho p						
Thronton Charity Ho pital	FNT	Church	40			5	92
Provident Ho pital and Free Dispensary (col)**	Gen	NPA's n	1	9	164	93	2 600
St Agnes Ho pital**	Gen	Church	150	10	314	147	3 307
St Joseph's Ho pital**	Gen	Church	200			612	380
Shel Ho pital**	Gen	NPA's n	229	40	757	184	2 100
South Baltimore General Hospital**	Gen	NPA's n	12	20	216	81	2 700
Sydenham Hospital	Gen	City	110			19	1 403
Union Memorial Ho pital**	Gen	NPA's n	112	24	313	19	2 700
U S Marine Hospital	Gen	USPHS	300			20	2 700
University Ho pital**	Gen	State	50	47	711	294	6 400
Volunteers of America Ho pital**	Gen	NPA's n	22	14	43	31	1 200
West Baltimore General Hospital**	Gen	Corp	16	30	23	70	2 300
Wilmer Ophthalmological In t	Unit of Johns Hopkins Ho pital						

MARYLAND—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Cambridge 8 344—Dorchester	Gen	NPA's n	66	14	100	35	979
Cambridge Maryland Hospital	Gen	NPA's n	66	14	100	35	979
Eastern Shore State Hospital	Mont	State	300			343	93
Catonsville 4 500—Baltimore	N&M	Indiv	300			21	70
Harlem Lodge	N&M	Indiv	300			1700	360
Spring Grove State Hospital*	Mont	State	1 800				
Crisfield 3 800—Somerset	Gen	NPA's n	30	3	49	12	470
Edward W McCready Memo	Gen	NPA's n	30	3	49	12	470
rial Hospital	Gen	NPA's n	30	3	49	12	470
Crownsville (Waterbury P O)—Anne Arundel	Mont	State	100			986	297
Crownsville State Ho p (col)	Mont	State	100			986	297
Cumberland 37 747—Allegany	Gen	NPA's n	90	10	761	60	1 961
Allegany Hospital of the Sta	Gen	Church	90	10	761	60	1 961
ters of Charity	Gen	Church	90	10	761	60	1 961
Memorial Hospital	Gen	Church	90	10	761	60	1 961
1aston 4 002—Talbot	Gen	NPA's n	80	19	160	61	1 677
Emergency Hospital	Gen	NPA's n	80	19	160	61	1 677
Lodgewood 110—Harford	Gen	Army	60			10	521
Station Hospital	Gen	Army	60			10	521
1ilton 3 331—Cecll	Gen	NPA's n	40	8	146	40	774
Union Hospital of Cecil County	Gen	NPA's n	40	8	146	40	774
Likert City 1 216—Howard	N&M	Corp	20			No data supplied	
Patapasco Manor Sanitarium	N&M	Corp	20			No data supplied	
Ft George G Meade—Anne Arundel	Gen	Army	100	4	30	43	1 201
Station Hospital	Gen	Army	100	4	30	43	1 201
Ft Howard 300—Baltimore	Gen	Army	31	4	14	10	26
Station Hospital	Gen	Army	31	4	14	10	26
Ft Washington 415—Prince George's	Gen	Army	28			11	300
Station Ho pital	Gen	Army	28			11	300
Frederick 14 434—Frederick	Gen	NPA's n	113	12	124	46	1 69
Frederick City Hospital	Gen	NPA's n	113	12	124	46	1 69
Frostburg 7 588—Allegany	Gen	State	50	3	76	20	300
Miners Hospital	Gen	State	50	3	76	20	300
Hagerstown 30 861—Washington	Gen	NPA's n	133	24	193	80	2 604
Washington County Hospital	Gen	NPA's n	133	24	193	80	2 604
Harve de Grace 3 980—Harford	Gen	NPA's n	42	10	89	39	861
Harve de Grace Hospital	Gen	NPA's n	42	10	89	39	861
Henrytown 27—Carroll	TB	State	212			185	191
Maryland Tuberculosis Sanatorium (col)	TB	State	212			185	191
1hamsville 72—Frederick	N&M	Indiv	20			23	27
Riggs Cottage Sanitarium	N&M	Indiv	20			23	27
Laurel 2 332—Prince Georges	N&M	Corp	75			65	173
Laurel Sanitarium	N&M	Corp	75			65	173
Mt Wil on—Baltimore	TB	State	170			176	130
Mt Wilson Branch Maryland Tuberculosis Sanatorium	TB	State	170			176	130
Olney 85—Montgomery	Gen	NPA's n	40	6	100	33	1 303
Montgomery County General Hospital	Gen	NPA's n	40	6	100	33	1 303
Perry Point 80—Cecll	Mont	Vet	1010			1 003	201
Veterans Admin Facility	Mont	Vet	1010			1 003	201
Prince Frederick 200—Calvert	Gen	County	30			No data supplied	
Calvert County Hospital	Gen	County	30			No data supplied	
Reisterstown 1 030—Baltimore	TB	NPA's n	60			38	90
Mt Pleasant	TB	NPA's n	60			38	90
Rockville 1 422—Montgomery	N&M	Indiv	30			28	51
Chestnut Lodge Sanitarium	N&M	Indiv	30			28	51
Salisbury 10 977—Wicomico	Gen	NPA's n	50			54	88
Maryland Tuberculosis Sanatorium Eastern Shore Branch	Gen	NPA's n	84	16	260	78	2 507
Peninsula General Hospital	Gen	NPA's n	84	16	260	78	2 507
State Sanatorium 260—Frederick	TB	State	510			400	760
Maryland Tuberculosis Sanatorium	TB	State	510			400	760
Stokesville 661—Carroll	Mont	State	2 000			2 333	510
Springfield State Hospital*	Mont	State	2 000			2 333	510
Fowson 3 000—Baltimore	Nerv	Indiv	20			16	64
Albghurth Manor	Nerv	Indiv	20			16	64
Hospital for Consumptives	TB	NPA's n	100			187	198
Sheppard and Inoch Pratt Hospital**	N&M	NPA's n	100			284	360
Related Institutions							
Baltimore 804 874—Baltimore City	In t	City	48			16	1 460
Baltimore City Jail Hospital	In t	City	48			16	1 460
Happy Hills Convalescent Home for Children	Conv	NPA's n	60			31	184
Home for Incurables	Inc	NPA's n	118			116	18
Maryland Penitentiary Ho p	In t	State	44			32	622
Cumberland 7 747—Allegany	TB	NPA's n	24			9	22
Allegany County Tuberculosis Sanatorium	TB	NPA's n	24			9	22
Sylvan Retreat	Mont	County	100			80	
Frederick 14 434—Frederick	Gen	County	32	10	123	33	607
Emergency Hospital	Gen	County	32	10	123	33	607
Hyattsville 4 204—Prince Georges	TB	Indiv	20			18	120
Pinehurst Sanitarium	TB	Indiv	20			18	120
Leesville 101—Anne Arundel	Inst	State	46			20	618
Maryland House of Correction Hospital	Inst	State	46			20	618
Leonrdtown 69—St Mary's	Gen	NPA's n	50	6	49	4	260
St Mary's County Ho pital	Gen	NPA's n	50	6	49	4	260
Owings Mills 210—Baltimore	McDe	State	1 100			1 011	80
Rosewood State Training School	McDe	State	1 100			1 011	80
Relay 2 000—Baltimore	N&M	Part	40			12	74
Relay Sanitarium	N&M	Part	40			12	74
Summary for Maryland							
Ho pitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	14	10 300	14 421	107 331			
	14	1 721	1 443	4 117			
Totals	81	18 021	15 864	111 448			
Refu ed registration	4						

MASSACHUSETTS

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Acushnet (New Bedford P O) 4 092—Bristol	Gen	Indiv	25	6	56	19	448
Acushnet Sanitarium and Hosp	Gen	Indiv	25	6	56	19	448
Adams 12 697—Berkshire	Gen	City	50	15	177	24	8 80
W B Plunkett Memorial Hosp	Gen	City	50	15	177	24	8 80
Amesbury 11 899—Essex	Gen	City	30	6	97	19	931
Amesbury Hospital	Gen	City	30	6	97	19	931
Arlington 36 094—Middlesex	N&M	Corp	60			38	241
Ring Sanatorium and Hosp	Gen	NPA'sn	60	19	220	38	1 406
Symmes Arlington Hospital	Gen	NPA'sn	60	19	220	38	1 406
Attleboro 21 769—Bristol	Gen	City	60			64	161
Bristol County Tuberculosis Hospital	TB	County	60			64	161
Sturdy Memorial Hospital	Gen	NPA'sn	102	23	306	37	1 304
Ayer 3 060—Middlesex	Gen	NPA'sn	22	7	61	13	474
Community Memorial Hospital	Gen	NPA'sn	22	7	61	13	474
Bedford 2 003—Middlesex	Ment	Vet	813			844	126
Veterans Admin Facility	Ment	Vet	813			844	126
Belmont 21 748—Middlesex	N&M	NPA'sn	232			206	216
McLean Hospital	N&M	NPA'sn	232			206	216
Beverly 25 086—Essex	Gen	NPA'sn	121	20	341	90	3 174
Beverly Hospital	Gen	NPA'sn	121	20	341	90	3 174
Boston 781 188—Suffolk	Gen	NPA'sn	36			24	114
Adams Nervine	Gen	NPA'sn	36			24	114
Beth Israel Hospital	Gen	NPA'sn	215			142	5 322
Boston City Hospital	Gen	City	1 560	148	3 191	1 389	41 479
Boston Floating Hospital	Chil	NPA'sn	50			30	1 006
Boston Lying in Hospital	Mat	NPA'sn	232	232	2 663	167	3 271
Boston Psychopathic Hosp	Ment	State	110			79	1 930
Boston State Hospital	Ment	State	2 426			2 299	838
Carney Hospital	Gen	Church	164	24	248	9	2 611
Channing Home	TB	NPA'sn	27			26	30
Children's Hospital	Chil	NPA'sn	293			192	0 737
Collis P Huntington Memorial Hospital	SkCa	NPA'sn	20			13	1 432
Diagnostic Hospital of the Boston Dispensary	Gen	NPA'sn	20			13	780
Emerson Hospital	Gen	Corp	25	10	121	20	402
Evangeline Booth Maternity Hospital and Home	Mat	Church	30	30	466	40	688
Faulkner Hospital	Gen	NPA'sn	130	21	470	119	3 387
Glenside Hospital	N&M	Corp	70			82	202
Greater Boston Bikur Cholim Hospital	Chr	NPA'sn	42			29	67
House of the Good Samaritan	Card	NPA'sn	80			72	188
Infants' Hospital	Chil	NPA'sn	50			30	753
Long Island Hospital	Gen	City	50	4	20	436	1 372
Massachusetts Lye and Ear Infirmary	ENT	NPA'sn	231			147	7 273
Massachusetts General Hospital	Gen	NPA'sn	420			375	8 200
Massachusetts General Hospital The Baker Memorial	Gen	NPA'sn	226	31	549	179	4 789
Massachusetts General Hospital Phillips House	Gen	NPA'sn	93	23	104	60	1 782
Massachusetts Memorial Hospital	Gen	NPA'sn	311	30	509	202	5 946
Massachusetts Women's Hosp	Gen	NPA'sn	62	20	217	37	828
New England Baptist Hosp	Gen	NPA'sn	100	20	180	106	4 742
New England Deaconess Hospital	Gen	Church	280			234	6 406
New England Hospital for Women and Children	Gen	NPA'sn	180	70	1 246	115	3 268
Palmer Memorial Hospital	Unit of the New England Deaconess Hosp						
Peter Bent Brigham Hosp	Gen	NPA'sn	246			190	4 343
Robert Breck Brigham Hosp	Gen	NPA'sn	110			71	563
St Elizabeth's Hospital	Gen	Church	200	50	740	102	4 083
St Margaret's Hospital	Gen	Church	50	32	434	30	1 151
St Mary's Maternity Hospital	MatCh	Church	12	12	134	6	139
Salvation Army Roxbury Hospital and Clinic	Gen	Church	30	9	72	17	717
Sanatorium Division of Boston City Hospital	TB	City	616			582	491
South Dept for Infectious Diseases of the Boston City Hospital	Unit of Boston City Hospital						
Vincent Memorial Hospital	Gen	NPA'sn	22			16	340
Bridgewater 9 000—Plymouth	Gen	State	9 8			908	60
Bridgewater State Hospital	Vent	State	9 8			908	60
Brookline 63 797—Plymouth	Gen	NPA'sn	125	29	338	90	2 502
Brookline Hospital	Gen	Corp	61	10	408	47	1 678
Goddard Hospital	Gen	Indiv	20	8	52	16	457
Moore Hospital	Gen	Indiv	20	8	52	16	457
Brookline 47 490—Norfolk	Nerv	Indiv	18			10	
Bournewood Hospital	Gen	NPA'sn	40	10	No data supplied		
Brookline General Hospital	Gen	NPA'sn	43			26	982
Brookline Hospital	Gen	Corp	43			26	982
Free Hospital for Women	Gyn	NPA'sn	97			11	1 900
Trumbull Hospital	Gen	NPA'sn	50	10	92	33	1 256
Cambridge 113 643—Middlesex	Gen	City	200	32	635	164	5 200
Cambridge City Hospital	Gen	NPA'sn	204	43	847	140	5 380
Cambridge Hospital	TB	City	80			80	100
Cambridge Sanatorium	Gen	Corp	85	10	54	26	600
Charle-gate Hospital	Gen	Corp	40	20	160	11	401
Chester Hospital	Gen	Corp	40	20	160	11	401
Canton 5 010—Norfolk	Gen	State	30			272	373
Massachusetts Hospital School	Orth	State	30			272	373
Chelsea 45 816—Suffolk	Gen	State	207	20	308	61	1 638
Captain John Adam Hospital at Soldiers Home	Gen	State	207	20	308	61	1 638
Chelsea Memorial Hospital	Gen	NPA'sn	167			142	1 439
U S Marine Hospital	Gen	USPHS	641			136	1 376
U S Naval Hospital	Gen	Navy	641			136	1 376
Clinton 12 811—Worcester	Gen	NPA'sn	60	20	201	30	977
Clinton Hospital	Gen	NPA'sn	60	20	201	30	977

MASSACHUSETTS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Cohasset 3 083—Norfolk							
Cohasset Private Hospital	Gen	Corp	20	9	52	9	90
Concord 7 447—Middlesex	Gen	NPA'sn	30	12	1 7	9	63
Emerson Hospital	Gen	NPA'sn	30	12	1 7	9	63
Valley head	Gen	Indiv	20				
Danvers 12 957—Essex	Gen	City	20	6	51	8	77
Hunt Memorial Hospital	Gen	City	20	6	51	8	77
Everett 48 424—Middlesex	Gen	NPA'sn	90	20	523	90	9 507
Whidden Memorial Hospital	Gen	NPA'sn	90	20	523	90	9 507
Fall River 110 274—Bristol	G&TB	City	281			10	9 403
Fall River General Hospital	Gen	Church	100	26	263	30	1 700
St Anne's Hospital	Gen	NPA'sn	140	10	242	77	9 415
Truesdale Hospital	Gen	NPA'sn	172	30	391	9	9 406
Union Hospital	Gen	NPA'sn	172	30	391	9	9 406
Fitchburg 40 692—Worcester	Gen	Corp	189	22	437	140	4 100
Burbank Hospital	Gen	Corp	189	22	437	140	4 100
Forest Hills (Boston P O)—Suffolk	Gen	NPA'sn	114	36	443	56	9 000
Forest Hills Hospital	Gen	NPA'sn	114	36	443	56	9 000
Ft Devens (Ayer P O)—Middlesex	Gen	Army	60			51	1 514
Station Hospital	Gen	Army	60			51	1 514
Foxboro 5 347—Norfolk	Ment	State	1 200			1190	200
Foxboro State Hospital	Ment	State	1 200			1190	200
Framingham 22 210—Middlesex	Gen	NPA'sn	130	20	508	90	9 400
Framingham Union Hospital	Gen	NPA'sn	130	20	508	90	9 400
Gardner 19 399—Worcester	Ment	State	1 340			1 430	100
Gardner State Hospital	Ment	State	1 340			1 430	100
Henry Heywood Memorial Hospital	Gen	NPA'sn	81	19	240	51	1 700
Gloucester 24 204—Essex	Gen	NPA'sn	70	10	188	44	1 700
Addison Gilbert Hospital	Gen	NPA'sn	70	10	188	44	1 700
Great Barrington 5 034—Berkshire	Gen	NPA'sn	49	10	84	16	400
Fairview Hospital	Gen	NPA'sn	49	10	84	16	400
Greenfield 15 500—Franklin	Gen	NPA'sn	87	30	240	50	1 100
Franklin County Public Hosp	Gen	NPA'sn	87	30	240	50	1 100
Groton 2 454—Middlesex	Gen	Indiv	13	4	96	16	560
Groton Hospital	Gen	Indiv	13	4	96	16	560
Hathorne 171—Essex	Ment	State	2 242			2100	900
Danvers State Hospital	Ment	State	2 242			2100	900
Haverhill 48 710—Essex	Gen	Indiv	26	2	14	18	500
Haverhill Hospital	Gen	City	101	22	304	104	600
Haverhill Municipal Hospitals	Gen	City	101	22	304	104	600
Haydenville 1 300—Hampshire	TB	County	100			80	90
Hampshire County Sanatorium	TB	County	100			80	90
Holbrook 3 303—Norfolk	Nerv	Indiv	15			8	31
Elmhurst Hospital and Sanit	Nerv	Indiv	15			8	31
Holden 3 871—Worcester	Gen	NPA'sn	80	6	81	10	1 000
Holden District Hospital	Gen	NPA'sn	80	6	81	10	1 000
Holyoke 56 537—Hampden	Gen	NPA'sn	126	24	370	60	1 000
Holyoke Hospital	Gen	NPA'sn	126	24	370	60	1 000
Holyoke Tuberculosis Sanat	TB	City	104	30	494	90	9 000
Providence Hospital	Gen	Church	104	30	494	90	9 000
Hyannis 1 600—Barnstable	Gen	NPA'sn	60	15	100	20	1 000
Cape Cod Hospital	Gen	NPA'sn	60	15	100	20	1 000
Ipswich 5 599—Essex	Gen	NPA'sn	20	7	122	13	400
Benjamin Stickney Cable Me	Gen	NPA'sn	20	7	122	13	400
morial Hospital	Gen	NPA'sn	20	7	122	13	400
Lawrence 8 068—Essex	Gen	Corp	27	8	164	18	700
Clover Hill Hospital	Gen	Corp	27	8	164	18	700
Lawrence General Hospital	Gen	NPA'sn	132	20	300	50	9 000
Lawrence Municipal Hospital	Gen	City	90	6	146	86	1 100
Leominster 21 510—Worcester	Gen	NPA'sn	61	12	190	41	1 200
Leominster Hospital	Gen	NPA'sn	61	12	190	41	1 200
St Joseph's Hospital	Gen	NPA'sn	150	30	300	90	3 200
Shaw Hospital	Gen	Church	142	20	387	108	900
Ludlow 8 866—Hampden	Gen	Church	100	17	244	90	1 100
Ludlow Hospital	Gen	Church	100	17	244	90	1 100
Lynn 102 320—Essex	Gen	NPA'sn	20	11	110	11	500
Lynn Hospital	Gen	NPA'sn	20	11	110	11	500
Union Hospital	Gen	NPA'sn	10	46	640	100	3 800
Malden 58 036—Middlesex	Gen	NPA'sn	190	40	414	81	9 000
Malden Hospital	Gen	NPA'sn	190	40	414	81	9 000
Marblehead 8 668—Essex	Gen	City	10	8	93	10	400
Mary A Alley Emergency Hosp	Gen	City	10	8	93	10	400
Marlboro 15 557—Middlesex	Gen	NPA'sn	60	22	208	50	1 000
Marlboro Hospital	Gen	NPA'sn	60	22	208	50	1 000
Medford 4 066—Norfolk	Ment	State	1 820			1 800	400
Medford State Hospital	Ment	State	1 820			1 800	400
Midford 9 714—Middlesex	Gen	NPA'sn	70	34	724	50	2 100
Lawrence Memorial Hospital	Gen	NPA'sn	70	34	724	50	2 100
Melrose 23 170—Middlesex	Gen	NPA'sn	100	20	471	70	1 700
Melrose Hospital	Gen	NPA'sn	100	20	471	70	1 700
New England Sanitarium and Hospital	Gen	Church	130	17	194	50	2 100
Middleboro 8 608—Plymouth	TB	State	304			50	1 000
Lakeville State Sanatorium	Gen	NPA'sn	23	8	90	10	200
St Luke's Hospital	Gen	NPA'sn	23	8	90	10	200
Middleton 1 712—Essex	TB	County	360			50	200
Essex Sanatorium	TB	County	360			50	200
Milford 14 741—Worcester	Gen	NPA'sn	60	10	207	22	1 200
Milford Hospital	Gen	NPA'sn	60	10	207	22	1 200
Milton 16 434—Norfolk	Gen	NPA'sn	20	12	82	16	500
Milton Hospital and Convalescent Home	Gen	NPA'sn	20	12	82	16	500
Montague City 761—Franklin	Gen	Church	68	12	111	26	1 100
Farren Memorial Hospital	Gen	Church	68	12	111	26	1 100
Nantucket 3 678—Nantucket	Gen	Corp	19	5	50	11	400
Nantucket Cottage Hospital	Gen	Corp	19	5	50	11	400
Natick 13 059—Middlesex	Gen	City	43	14	207	26	1 000
Leonard Morse Hospital	Gen	City	43	14	207	26	1 000
Needham 10 545—Norfolk	Gen	City	11	5	49	7	300
Glover Memorial Hospital	Gen	City	11	5	49	7	300

MASSACHUSETTS—Continued

Key to symbols and abbreviations is on page 798

MASSACHUSETTS—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Somerville 103 908—Middlesex Chandler Street Hospital	Gen	Indiv	10	10	11	3	40
Somerville Contagious Disease Hospital	Is	City	60			6	104
Springfield 149 900—Hampden Bussell Nursing Home	Conv	Indiv	20			13	32
City of Springfield Infirmary	Inst	City	108			80	271
Reneau Wilson Private Hosp	Gen	Part	9	36		2	104
Waltham 39 247—Middlesex Terman Lying In Hospital	Mat	Indiv	10	6	122	6	124
Walter E Fernald State School	MeDe	State	1700			1812	132
Waltham Baby Hospital	Chil	NPA's'n	2			8	57
Wellesley 11 430—Norfolk Convalescent Home of the Children's Hospital	Chil	NPA's'n	80			70	458
Simpson Infirmary of Wellesley College	Inst	NPA's'n	20			8	401
Westboro 6 409—Worcester Lyman School Hospital	Inst	State	30			9	
West Concord 1801—Middlesex Massachusetts Reformatory Hospital	Inst	State	50			4	382
Williamstown 2 900—Berkshire Williams College Infirmary	Inst	NPA's'n	21			4	214
Worcester 100 211—Worcester Maple Hall Sanitarium	Conv	Part	10			12	
Wrentham 3 534—Norfolk Wrentham State School	MeDe	State	1946			1802	176

Summary for Massachusetts

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	210	49 857	41,990	239,940
Related institutions	6	7 012	6 212	11 846
Totals	216	56 869	48 202	251 786
Refused registration	10	421		

MICHIGAN

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Adrian 10 064—Lenawee Emma L Bixby Hospital	Gen	City	42	10	164	20	870
Albion 8 324—Calhoun James W Sheldon Memorial Hospital	Gen	City	40	10	64	14	400
Alma 6 734—Gratiot Carney Wilcox Hospital	Gen	Part	31	4	31	21	584
R B Smith Memorial Hospital	Gen	NPA's'n	20	4	40	6	202
Ann Arbor 26 944—Washtenaw Cowie Hospital	Gen	Indiv	12	2	1	2	118
Mercywood Sanitarium	N&M	Church	40			24	140
St Joseph's Mercy Hospital*	Gen	Church	110	20	240	73	2267
State Psychopathic Hospital at the University of Michigan*	Ment	State	64			58	188
University Hospital**	Gen	State	120	34	499	1242	23 784
Bad Axe 2 332—Huron Hubbard Memorial Hospital	Gen	County	20	6	48	10	507
Battle Creek 43 573—Calhoun American Legion Hospital*	TB	State	375			17	190
Battle Creek Sanitarium**	Gen	NPA's'n	1000			224	4 398
Calhoun County Public Hosp	TB	County	70			69	83
Leila Y Post Montgomery Hospital*	Gen	Church	108	17	326	78	2409
Nichols Memorial Hospital*	Gen	NPA's'n	80	13	21	46	448
Bay City 47 350—Bay City General Hospital	Gen	City	20	6	42	15	629
Bay City Samaritan Hospital	Gen	NPA's'n	40	4	34	27	1 306
Mercy Hospital*	Gen	Church	122	18	229	70	2 400
Benton Harbor 15 434—Berrien Mercy Hospital	Gen	NPA's'n	40	10	168	33	1 140
Big Rapids 4 671—Mecosta Community Hospital	Gen	City	14	4	20	8	426
Brighton 1 287—Livingston Mellor Hospital	Gen	Indiv	10	4	22	12	480
Cadillac 9 500—Wexford Mercy Hospital	Gen	Church	50	8	9	20	1 041
Wexford County Hospital	G&TB	County	20			20	41
Calumet 1 557—Houghton Calumet and Hecia Hospital	Indus	Corp	22			8	471
Camp Custer—Kalamazoo Veterans Admin Facility	Ment	Vet	830				840
Caro 2 534—Tuscola Caro Community Hospital	Gen	City	21	1	18	9	296
Cassopolis 1 448—Cass McCutcheon Hospital	Gen	Part	8	4	26	4	214
Charlotte 5 307—Eaton Hayes Green Memorial Hosp	Gen	County	10	5	70	6	560
Coldwater 6 730—Branch Wade Memorial Hospital	Gen	Indiv	20			42	501
Crystal Fall 2 000—Iron Crystal Falls General Hospital	Gen	Indiv	14	2	11	5	178
Dearborn 50 300—Wayne St Joseph's Retreat	N&M	Church	300				330
Detroit 1 508 022—Wayne Bethesda Hospital (col)	TB	NPA's'n	60	6	81	70	120
Charles Godwin Tenning Hosp	Gen	NPA's'n	52			27	1 114
Chenik Hospital	TB	NPA's'n	220			201	7 091
Children's Hospital*	Chil	NPA's'n					
City of Detroit Receiving Hospital**	Gen	City	600			63	21 008

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
City of Detroit Receiving Hospital (Redford Branch)	Gen	City	50			33	1 000
Cottage Hospital	Gen	NPA's'n	40	10	20	24	170
Delray General Hospital	Gen	NPA's'n	80	10	200	40	1 000
Detroit Tuberculosis Sanat	TB	NPA's'n	160			100	13
East Side General Hospital	Gen	NPA's'n	85	20	114	50	177
Evangelical Deaconess Hosp*	Gen	Church	110	20	440	80	2 000
Fairview Sanatorium (col)	TB	NPA's'n	60			64	40
Florence Crittenton Hospital	Gen	NPA's'n	210	100	1 000	140	3 500
General Hospital and Clinic	Gen	Corp	40	6	2	40	90
Good Samaritan Hosp (col)	TB	Indiv	20			20	110
Grace Hospital**	Gen	NPA's'n	400	100	1 000	300	11 000
Grosse Pointe Hospital	Gen	Indiv	30	14	100	21	100
Harper Hospital**	Gen	NPA's'n	620	100	1 100	500	10 000
Henry Ford Hospital**	Gen	NPA's'n	572	36	880	490	11 000
Herman Kiefer Hospital**	C&TB	City	1 330	60	1 600	100	2 000
Jefferson Clinic Hospital*	Gen	NPA's'n	60	5	20	30	100
Lincoln Hospital	Gen	Corp	90	7	54	24	90
Michigan Mutual Hospital	Indus	NPA's'n	30			30	100
Parkside Hospital (col)	Gen	NPA's'n	32	12	119	49	1 300
Pingree General Hospital	Gen	Corp	20	11	158	25	500
Providence Hospital**	Gen	Church	150	100	1 010	250	4 000
St Joseph's Mercy Hospital*	Gen	Church	200	50	870	100	2 000
St Mary's Hospital*	Gen	Church	250	10	360	100	5 000
Shurly Live Ear Nose and Throat Hospital	INT	Indiv	70			30	120
Station Hospital	Gen	Army	40			10	600
U S Marine Hospital	Gen	USPHS	204			100	1 000
Warren Avenue Diagnostic Hospital	Gen	Indiv	18			14	40
West Side Sanitarium	Gen	Indiv	70			21	100
Woman's Hospital*	Gen	NPA's'n	220	100	1 000	120	4 000
Dowagiac 5 500—Cass Lee Memorial Hospital	Gen	Church	20	4	10	10	40
Durand 3 001—Shuawassee Durand Hospital	Gen	NPA's'n	1	4	20	5	20
Fenton Rapids 2 822—Fenton Harriet Chapman Memorial Hospital	Gen	Indiv	12	2	24		100
Flores 710—Wayne Eloise Hospital for Mental Diseases	N&M	County	3 200			300	800
Dr William J Seymour Hospital**	Gen	County	1 700				1 200
Escanaba 14 524—Delta Lang Hospital	Gen	Indiv	20			7	100
St Francis Hospital	Gen	Church	70	20	20	40	1 000
Flint 1 649—Genesee Hurley Hospital**	Gen	City	412	50	960	240	800
St Joseph's Hospital	Gen	Church	150	20	400	40	1 000
Women's Hospital	Gen	NPA's'n	40	20	500	20	1 000
Fremont 2 107—Newaygo Gerber Memorial Hospital	Gen	City	18	5	38	11	40
Goodrich 324—Genesee Goodrich General Hospital	Gen	NPA's'n	24	4	46	12	50
Grand Haven 8 34—Ottawa Elizabeth Hutton Memorial Hospital	Gen	City	20	6	87	8	50
Grand Rapids 168 592—Kent Blodgett Memorial Hospital**	Gen	NPA's'n	1 200	18	300	100	2 000
Butterworth Hospital*	Gen	NPA's'n	224	48	612	200	4 000
Christian Psychopathic Hosp	N&M	NPA's'n	240			100	500
City General Hospital	Gen	City	30			20	500
Ferguson Droste Ferguson Sanitarium	Proct	Corp	30			10	600
St Mary's Hospital**	Gen	Church	218	30	400	110	1 000
Sunshine Sanatorium	TB	City	190			126	1 000
Grayling 1 973—Crawford Grayling Mercy Hospital	Gen	Church	30	5	18	10	500
Greenville 4 730—Montcalm United Memorial Hospital	Gen	NPA's'n	19	6	40	9	0
Hamtramck 56 208—Wayne St Francis Hospital	Gen	Church	72	8	104	46	1 000
Hancock 5 790—Houghton St Joseph's Hospital*	Gen	Church	60	8	100	40	1 000
Hart 1 690—Oceana Oceana Hospital	Gen	NPA's'n	17	4	60	10	600
Hastings 5 227—Barry Pennock Hospital	Gen	NPA's'n	27	8	111	12	500
Highland Park 52 930—Wayne Highland Park General Hospital*	Gen	City	156	4	749	106	400
Hillsdale 5 890—Hillsdale Hillsdale Hospital	Gen	City	20	6	66	10	100
Holland 14 746—Ottawa Holland City Hospital	Gen	City	48	10	110	24	700
Houghton 3 737—Houghton Copper Country Sanatorium	TB	County	50			5	100
Howell 3 610—Livingston McPherson Memorial Hospital	Gen	City	24	7	62	10	200
Michigan State Sanatorium*	TB	State	480			400	2 000
Hudson 2 361—Lenawee Thorn Memorial Hospital	Gen	City	20	4	31	6	200
Ionia 6 562—Ionia Ionia State Hospital	Ment	State	600			800	100
Iron Mountain 11 602—Dickinson Iron Mountain General Hosp	Gen	City	20	8	90	16	100
Ironwood 14 290—Gogebic Grand View Hospital	G&TB	County	112	8	86	60	1 000
Newport Ho Hospital	Gen	Corp	12	3	50	5	200
Twin City Hospital	Gen	Indiv	21	3	19	5	500
Ishpeming 9 238—Marquette Ishpeming Hospital	Gen	Corp	37	6	107	23	800

Key to symbols and abbreviations is on page 798

MICHIGAN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds	Rate Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Sault Ste Marie 13755—Chippewa								
Chippewa County War Memorial Hospital	Gen	County	64	14	185	48	1381	
Station Hospital	Gen	Army	40					
South Haven 4504—Van Buren	Gen	City	70	6	76	8	309	
City Hospital	Gen	Indiv	12	6	22	6	193	
Penoyer Memorial Hospital								
Stambaugh 2400—Iron								
General Hospital Company of Iron River District	Gen	NPA's'n	27	6	3	11	428	
Sturgis 6545—St Joseph								
Sturgis Memorial Hospital	Gen	City	38	6	142	16	671	
Three Rivers 6863—St Joseph								
Three Rivers Hospital	Gen	City	39	5	61	14	509	
Traverse City 12336—Grand Traverse								
James Decker Munson Hosp	Gen	State	8	11	126	2	1047	
Traverse City State Hosp	Ment	State	2309		2	106	1097	
Trimountain 3541—Houghton								
Copper Range Hospital	Gen	NPA's'n	20	1	14		132	
Wakefield 3677—Gogebic								
Wakefield Hospital	Gen	Corp	13	5	28	3	64	
West Branch 1164—Ogemaw								
Tolfree Memorial Hospital	Gen	City	1	3	16	6	146	
Wyandotte 28368—Wayne								
Wyandotte General Hospital	Gen	City	160	39	784	99	2938	
Xpsilanti 10143—Wachtenaw								
Beyer Memorial Hospital	Gen	City	2	6	133	16	594	
Ieland Sanatorium	FB	NPA's'n	188			43	87	
Xpsilanti State Hospital	Ment	State	1490		1496		222	
Zeeland 2850—Ottawa								
Thomas G Hulzinga Memorial Hospital	Gen	NPA's'n	1	3	79	6	23	
Related Institutions								
Addison 452—Lenawee								
Addison Community Hospital	Gen	County	5	3	18	2	98	
Adrian 13064—Lenawee								
Lenawee County Tuberculosis Sanatorium	TB	County	2			20	13	
Alma 6734—Gratiot								
Michigan Masonic Home and Hospital	Inst	Frat	30			20	9	
Charlevoix 277—Charlevoix								
Charlevoix Hospital	Gen	NPA's'n	20	7	37	13	472	
Coldwater 6735—Branch								
Branch County Infirmary and Hospital	Inst	County	62			No data supplied		
Michigan Children's Village	Inst	MeDe	340				New	
Crystal Falls 299—Iron								
Iron County Infirmary	Gen	County	14			12		
Detroit 1568662—Wayne								
Memorial Hospital	SKCa	Part	6			1	104	
Mercy Hospital (col)	Gen	Indiv	46	6	50	20	289	
St Luke's Convalescent Home	Conv	Church	26			20	89	
Saratoga General Hospital	Gen	NPA's'n	40	7	170	18	822	
Sheppard Hospital	Conv	Indiv	2	2	8	14	62	
William Booth Memorial Hosp	Mat	Church	56	32	298	38	355	
Douglas 368—Allegan								
Douglas Hospital	Gen	Indiv	11	3	15	4	149	
Edmore 897—Montcalm								
Edmore Hospital	Gen	Indiv	10	2	23	4	249	
Farmington 1243—Oakland								
Children's Hospital Convalescent Home	Conv	NPA's'n	240			16	497	
Whenkel Convalescent Home	TB	Indiv	28			21	54	
Flint 16492—Cenece								
Cenece County Infirmary	Inst	County	18	6	20	170		
Michigan School for the Deaf	Inst	State	36			7	386	
Grand Rapids 16852—Kent								
Kent County Receiving Hosp	N&M	County	32			19	397	
Michigan Soldiers' Home Hosp	Inst	State	24			12		
Municipal Isolation Hospital	Isol	City	40			18	310	
Salvation Army Frangelene Booth Home and Ho pital	Mat	Church	49	9	97	30	112	
Harbor Beach 1892—Huron								
Harbor Beach Ho pital	Gen	Corp	18	4	61	7	341	
Ionia 6562—Ionia								
Michigan State Reformatory	Inst	State	24			12	112	
Jackson 55187—Jackson								
Florence Crittenton Home and Ho pital	Mat	NPA's'n	2	12	50	14	4	
Jackson County Contagious Ho pital	Isol	CyCo	3			6	90	
Michigan State Prison Hosp	Inst	State	22			13	1740	
Lansing 78397—Ingham								
Boy's Vocational School Hosp	Inst	State	6			10	720	
Lauing City Hospital	Isol	City	50				509	
Lapeer 500—Lapeer								
Lapeer City Hospital	Gen	Part	18	4	22	9	102	
Michigan Home and Training School	MeDe	State	416			359	204	
Marquette 14789—Marquette								
Hospital of the State House of Correction and Branch Prison	Inst	State	24			7	274	
Mt Clemens 13497—Macomb								
Sigma Gamma Convalescent Home for Crippled Children	Orth	NPA's'n	50			23	190	
Mt Pleasant 5211—Isabella								
Mt Pleasant General Ho pital	Gen	Indiv	45	5	86		46	
Northville 2566—Wayne								
Wayne County Training School	MeDe	County	83			65	146	
Olema 216—Ingham								
Ingham County Infirmary	Conv	County	40			40	6	

Key to symbols and abbreviations is on page 798

MICHIGAN—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Ontonagon 1937—Ontonagon Bon Air Tuberculosis Sanat	TB	County	16			16	8
Otter Lake 336—Lapeer American Legion Children's Bil	TB	Frat	12			12	260
Pontiac 64,928—Oakland Oakland County Infirmary	Inst	County	100			70	204
Port Huron 31,61—St Clair Port Huron Emergency Hosp	TbIs	City	18	6		2	51
Rochester 3,534—Oakland The Haven	N & M	Indiv	32			19	143
Rogers City 3,278—Presque Isle Rogers City Hospital	Gen	Indiv	6	1	5	2	50
Royal Oak 22,904—Oakland Sunnybrook Hospital	Gen	Indiv	23	7	104	8	374
St Clair 3,389—St Clair St Clair Community Hospital	Gen	City	12	5	40		203
Shelby 1,102—Oceana Shelby Community Hospital	Gen	NPA's'n	11	4	20	6	208
Stockbridge 715—Ingham Rowe Memorial Hospital	Gen	Part	7	3	30	3	106
Traverse City 12,330—Grand Traverse Grand Traverse County Hosp	Gen	County	23	2	2	16	189
Wahyamega 111—Tuscola Michigan Farm Colony for Epileptics	Fpl	State	1,044			902	176
Summary for Michigan							
Hospitals and sanatoriums			Number	Beds	Average Patients		Patients Admitted
Related institution..			182	34,812	28,441		289,288
			50	8,207	6,809		17,672
Totals			232	43,074	35,300		306,960
Refused registration			19	416			

MINNESOTA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Ada 1,280—Norman Norman County Memorial Hosp	Gen	NPA's'n	10	3	3	4	245
Ah-gwah-chung 40—Cass Minnesota State Sanatorium	TB	State	400			200	282
Albert Lea 10,169—Freeborn Naeve Hospital	Gen	NPA's'n	70	10	246	38	1,826
Alexandria 3,876—Douglas Douglas County Hospital	Gen	NPA's'n	30	6	39	11	312
St. Luke's Hospital	Gen	Indiv	17	6	30	9	280
Anoka 4,801—Anoka Gates Hospital	Gen	Indiv	11	5	28		94
Appleton 1,627—Swift Kaufman Hospital	Gen	Indiv	10	3	29	9	434
Austin 12,276—Mower St. Olaf Lutheran Hospital	Gen	Church	53	12	203	37	1,639
Bagley 880—Clearwater Clearwater Hospital	Gen	Indiv	12	4	27	5	202
Battle Lake 502—Otter Tail Otter Tail County Sanatorium	TB	County	44			40	30
Bemidji 7,202—Beltrami Lutheran Hospital	Gen	NPA's'n	50	6	92	21	823
Benson 2,090—Swift Swift County Hospital	Gen	NPA's'n	19	5	39	8	394
Biwabik 1,383—St. Louis Biwabik Hospital	Gen	Indiv	12	5	18	3	114
Blue Earth 2,884—Faribault Blue Earth Hospital	Gen	Indiv	8	4	20	4	150
Brainerd 10,221—Crow Wing St. Joseph's Hospital	Gen	Church	63	15	119	35	1,494
Breckenridge 2,264—Wilkin St. Francis Hospital	Gen	Church	50	8	130	29	1,010
Buffalo 1,409—Wright Cuthin Hospital	Gen	Indiv	12	3	12	4	120
Canby 1,718—Yellow Medicine John Swenson Memorial Hosp	Gen	City	18	5	31	6	226
Cannon Falls 1,308—Goodhue Mineral Springs Sanatorium	TB	County	100			95	69
Clarkfield 802—Yellow Medicine Clarkfield Community Hospital	Gen	Indiv	10	4	31	5	247
Cloquet 6,782—Carlton Fond du Lac Indian Hospital	Gen	I A	20	4	64	20	502
Raiter Hospital	Gen	Part	28	5	107	18	707
Crookston 6,721—Polk Bethesda Hospital	Gen	Church	40	7	104	34	982
St. Vincent's Hospital	Gen	Church	44	6	77	29	934
Sunnyrest Sanatorium	TB	County	70			57	60
Crosby 3,401—Crow Wing Mines Hospital	Gen	Indiv	20	6	20	5	120
Dawson 1,306—Lac qui Parle Dawson Surgical Hospital	Gen	NPA's'n	20	4	21	12	333
Deerwood 502—Crow Wing Deerwood Sanatorium	TB	County	24			23	19
Detroit Lakes 3,670—Becker Community Hospital	Gen	NPA's'n	21	6	65	13	451
Duluth 101,463—St. Louis Miller Memorial Hospital	Gen	City	20	6		12	224
St. Luke's Hospital	Gen	NPA's'n	237	2	718	163	1,169
St. Mary's Hospital	Gen	Church	250	20	613	167	4,816
Webber Hospital	Gen	Indiv	40	10		20	

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Ely 6,156—St. Louis Shipman Hospital	Gen	Part	15	6	36	6	208
Eveth 7,484—St. Louis More Hospital	Gen	Corp	30	8	64	17	712
Fairmont 5,521—Martin Fairmont Hospital	Gen	Indiv	12	4	18	5	211
Gardner Hospital	Gen	Indiv	10	2	9	4	211
Faribault 12,767—Rice St. Lucius Evangelical Deaconess Hospital	Gen	Church	50	14	219	31	1,132
Farmington 1,342—Dakota Community Hospital	Gen	Indiv	20	4	53	12	360
Fergus Falls 9,389—Otter Tail Fergus Falls State Hospital	Ment	State	1,960			1,064	186
George B. Wright Memorial Hospital	Gen	NPA's'n	38	9	82	21	840
St. Luke's Hospital	Gen	NPA's'n	48	8	98	28	638
St. Snelling 1,827—Hennepin Station Hospital	Gen	Army	100	1	46	107	9,448
Fosston 978—Polk Fosston Hospital	Gen	Part	12	4	58	8	301
Graceville 969—Big Stone Western Minnesota Hospital	Gen	Corp	30	5	70	10	602
Grand Rapids 3,206—Itasca Itasca Hospital	Gen	County	48	9	160	37	1,528
Granite Falls 1,791—Yellow Medicine Granite Falls Hospital	Gen	Indiv	10	5	30	7	200
Riverside Sanatorium	TB	County	52			49	24
Hallbrook 869—Kittson Kittson War Veterans Memo rial Hospital	Gen	County	20	6	71	24	693
Hendricks 702—Lincoln Hendricks Hospital	Gen	NPA's'n	14	4	20	8	800
Heron Lake 786—Jackson Southwestern Minnesota Hosp	Gen	Indiv	12	2	19	3	100
Hibbing 15,666—St. Louis Adams Hospital	Gen	Indiv	20	6	62	11	700
Rood Hospital	Gen	Indiv	40	12	133	22	1,041
Hutchinson 3,406—McLeod Hutchinson Community Hosp	Gen	NPA's'n	20	6	54	12	512
International Falls 5,036—Koochiching Craig Hospital	Gen	Indiv	26	6	30	20	362
Northern Minnesota Hospital	Gen	Corp	50	6	36	8	376
Jackson 2,206—Jackson Halloran Hospital	Gen	Part	12	4	30	5	187
Lake City 3,210—Wabasha Lake City Hospital	Gen	NPA's'n	19	5	60	12	101
Lake Park 624—Becker Sand Beach Sanatorium	TB	County	46			42	13
Litchfield 2,880—Meeker Litchfield Hospital	Gen	Corp	30	6	80	13	100
Little Falls 5,014—Morrison St. Gabriel's Hospital	Gen	Church	42	8	114	20	1,277
Luverne 2,644—Rock Luverne Hospital	Gen	Part	15	6	70	5	200
Madison 1,916—Lac qui Parle Ebenezer Lutheran Hospital	Gen	Church	20	5	34	8	301
Mankato 14,078—Blue Earth Immanuel Hospital	Gen	Church	60	10	138	27	974
St. Joseph's Hospital	Gen	Church	90	20	249	50	1,610
Marshall 3,200—Lyon Marshall Hospital	Gen	Corp	20	5	9	8	200
Melrose 1,801—Stearns Melrose Hospital	Gen	Indiv	10	3	26	5	248
Minneapolis 464,306—Hennepin Abbott Hospital	Gen	Church	90	18	240	66	2,621
Asbury Hospital	Gen	Church	122	18	291	70	2,611
Litel Hospital	Gen	NPA's'n	100	20	294	91	4,889
Fairview Hospital	G & TB	Church	200	25	391	77	3,471
Harriet Walker Hospital	Mat	NPA's'n	50	35	106	33	104
Hill Crest Surgical Hospital	Gen	NPA's'n	48	20	226	27	1,078
Lutheran Deaconess Home and Hospital	Gen	Church	120	30	460	80	2,700
Maternity Hospital	MatCh	NPA's'n	83	24	529	60	900
Minneapolis General Hospital	Gen	City	607	71	1,592	482	11,813
Minnesota General Hospital Northwestern Hospital	Gen	NPA's'n	160	20	361	129	4,220
St. Andrew's Hospital	Gen	Church	80	20	311	56	2,827
St. Barnabas Hospital	Gen	NPA's'n	137	18	342	70	2,920
St. Mary's Hospital	Gen	Church	230	30	509	114	3,578
Shriners Hospital for Crippled Children	Orth	Frat	60			58	212
Swedish Hospital	Gen	NPA's'n	271	42	688	101	4,921
University Hospital	Gen	State	490	30	430	31	8,410
Veterans Admin. Facility	G & TB	Vet	642			507	2,622
William Henry Fustis Children's Hospital	Gen	Unit of Univer	10			10	100
Montevideo 4,310—Chippewa Montevideo Hospital	Gen	NPA's'n	40	10	138	21	941
Moorhead 7,651—Clay St. Ansgars Hospital	Gen	Church	50	10	100	31	900
Woo Lake 742—Carlton Moose Lake Community Hosp	Gen	Indiv	12	3	57	4	220
Morris 2,474—Stevens Morris Hospital	Gen	Indiv	12	4	20	5	100
Mountain Lake 1,388—Cottonwood Bethel Hospital	Gen	Church	20	5	78	8	210
New Prague 1,412—Le Sueur New Prague Community Hosp	Gen	NPA's'n	20	3	34	6	200
New Ulm 7,308—Brown Loretto Hospital	Gen	Church	40	8	115	27	800
Union Hospital	Gen	NPA's'n	10	10	90	27	800
Opemung 384—St. Louis Opemung Sanatorium	TB	County	220			227	204
Northfield 4,103—Rice Northfield City Hospital	Gen	City	10	4	23	5	151

Key to symbols and abbreviations is on page 798

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Oak Terrace—Hennepin	TB	County	701	6	5	701	488
Glen Lake Sanatorium*	Gen	I A	21	4	44	25	510
Onigum 10—Cass	Gen	Church	20	4	36	5	192
Ortonville 2 017—Big Stone	Gen	Church	20	4	36	5	192
Ortonville Evangelical Hosp	Gen	Church	20	4	36	5	192
Owatonna 7 654—Steele	Gen	City	46	9	119	16	976
Owatonna City Hospital	Gen	City	46	9	119	16	976
Paynesville 1 121—Stearns	Gen	Indiv	15	3		8	
Paynesville Hospital	Gen	Indiv	15	3		8	
Perham 1 411—Otter Tail	Gen	Church	40	6	73	30	1 196
St James Hospital	Gen	Church	40	6	73	30	1 196
Pine River 422—Cass	Gen	Indiv	39	4	121	20	540
Holman Hospital	Gen	Indiv	39	4	121	20	540
Pipestone 3 489—Pipestone	Gen	NPA'ssn	46	4	66	26	850
Ashton Memorial Hospital	Gen	NPA'ssn	46	4	66	26	850
Poekama—Pine	TB	NPA'ssn	56			21	50
Poekama Sanatorium	TB	NPA'ssn	56			21	50
Princeton 1 636—Mille Laes	Gen	Indiv	30	4	28	5	612
Northwestern Hospital	Gen	Indiv	30	4	28	5	612
Pupok, 63—Beltrami	TB	County	55			59	65
Lake Julia Tuberculosis Sanat	TB	County	55			59	65
Redlake 214—Beltrami	Gen	I A	23	6	70	16	768
Red Lake Indian Hospital	Gen	I A	23	6	70	16	768
Red Wing 9 629—Goodhue	Gen	City	36	4	58	25	867
Red Wing Hospital	Gen	City	36	4	58	25	867
St John's Hospital	Gen	NPA'ssn	75	15	166	38	1 235
Redwood Falls 2 552—Redwood	Gen	Part	15	4	36	5	504
Redwood Falls Hospital	Gen	Part	15	4	36	5	504
Richmond 605—Stearns	Gen	NPA'ssn	10		34	4	260
Richmond Hospital	Gen	NPA'ssn	10		34	4	260
Richmond 20 621—Olmsted	Gen	Corp	250			212	6 914
Colonial Hospital	Gen	Corp	250			212	6 914
Rochester State Hospital	Gen	State	1 579			1 624	5 790
St Mary's Hospital	Gen	Church	557	27	437	339	8 198
Worrall Hospital	ShCa ENT Corp	Corp	196				6 789
Roseau 1 025—Roseau	Gen	Indiv	15	3	21	5	266
Budd Hospital	Gen	Indiv	15	3	21	5	266
St Cloud 21 000—Stearns	Gen	Church	220	21	323	128	3 058
St Cloud Hospital	Gen	Church	220	21	323	128	3 058
Veterans Admin Facility	Vent	Vet	752				92
St Paul 271 606—Ramsey	Gen	CyCo	850	50	1 399	759	11 454
Ancker Hospital*	Gen	Church	100	20	606	91	3 953
Bethesda Hospital*	Gen	NPA'ssn	199	21	468	122	5 164
Charles T Miller Hospital*	Gen	NPA'ssn	199	21	468	122	5 164
Children's Hospital	Chil	NPA'ssn	65			24	1 210
Gillette State Hospital for Crippled Children*	Orth	State	250			296	509
Midway Hospital	Gen	Church	100	25	443	81	2 600
Mounds Park Sanitarium*	Gen	Church	125	12	175	77	1 586
Northern Pacific Beneficial Association Hospital*	Gen	NPA'ssn	150	12	100	84	2 411
St John's Hospital	Gen	Church	150	12	100	84	2 411
St Joseph's Hospital*	Gen	Church	246	24	492	171	5 863
St Luke's Hospital	Gen	NPA'ssn	125	25	259	47	1 796
West Side General Hospital	Gen	Church	65	16	158	28	1 380
St Peter 4 811—Mecollet	Gen	Corp	26	10	71	9	297
Covell Hospital	Gen	Corp	26	10	71	9	297
St Peter State Hospital	Ment	State	2 037			1 949	613
Slayton 1 102—Murray	Gen	Part	22	4		8	
Home Hospital	Gen	Part	22	4		8	
Springfield 2 049—Brown	Gen	Church	18	5	47	6	228
St John's Hospital	Gen	Church	18	5	47	6	228
Spring Grove 887—Houston	Gen	Corp	15	7	53	7	321
Spring Grove Hospital	Gen	Corp	15	7	53	7	321
Starbuck 731—Pope	Gen	NPA'ssn	14	3	25	6	162
Minnewaska Hospital	Gen	NPA'ssn	14	3	25	6	162
Stillwater 7 173—Washington	Gen	CyCo	38	6	198	23	650
Lakeview Memorial Hospital	Gen	CyCo	38	6	198	23	650
Tief River Falls 4 268—Pennington	TB	County	5			51	35
Oakland Park Sanatorium	TB	County	5			51	35
Physicians Hospital	Gen	NPA'ssn	21	6	90	14	713
St Luke's Hospital	Gen	NPA'ssn	39	6	10	21	929
Traver 9 570—Lyon	Gen	Part	12	4	38	5	185
Clinic Hospital	Gen	Part	12	4	38	5	185
Tracy Hospital	Gen	Indiv	17	4	63	10	589
Two Harbors 4 49—Lake	Gen	Part	35	6	67	13	624
Burns and Christensen Hosp	Gen	Part	35	6	67	13	624
Tyler 90—Lincoln	Gen	NPA'ssn	18	5	46	7	387
Tyler Hospital	Gen	NPA'ssn	18	5	46	7	387
Virginia 11 963—St Louis	Gen	Indiv	14	4	26	6	219
Ienont Hospital	Gen	Part	14	4	26	6	219
Virginia General Ho pital	Gen	Part	14	4	26	6	219
Waba ha 2 912—Waba ha	TB	County	70			25	14
Buena Vista Sanatorium	TB	County	70			25	14
St Elizabeth's Hospital	Gen	Church	38	6	48	22	465
Wadena 2 512—Wadena	TB	County	38			20	26
Fair Oaks Lodge Sanatorium	TB	County	38			20	26
Wiley Hospital	Gen	Church	43	5	73	18	687
Walker 615—Cass	Gen	Indiv	25	6	25	4	235
Walker Ho pital	Gen	Indiv	25	6	25	4	235
Warren 14—Marshall	Gen	Church	50	6	53	12	406
Warren Hospital	Gen	Church	50	6	53	12	406
Wadena 2 512—Wadena	Gen	City	56	8	100	7	390
White Earth 41—Becker	Gen	I A	20	6	112	19	525
White Earth Indian Ho pital	Gen	I A	20	6	112	19	525
William 6 173—Kandiyohi	Gen	Indiv	16	6	22		22
General Ho pital	Gen	Corp	34	4	45	16	437
William Ho pital	Gen	Corp	34	4	45	16	437
Windom 2 173—Cottonwood	Gen	NPA'ssn	15	5	30	7	395
Windom Ho pital	Gen	NPA'ssn	15	5	30	7	395
Winnipeg 1 701—Faribault	Gen	Part	9	4	25	3	154
Winnipeg Community Ho p	Gen	Part	9	4	25	3	154

MINNESOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Winona 20 850—Winona	Gen	NPA'ssn	109	20	285	47	1 510
Winona General Hospital	Gen	NPA'ssn	109	20	285	47	1 510
Worthington 3 878—Nobles	TB	County	54			54	39
Southwestern Minnesota Sanat	Gen	Part	20	5	53	16	617
Worthington Clinic Hospital	Gen	Part	20	5	53	16	617
Worthington Hospital	Gen	Indiv	10	6	50	8	300
Related Institutions							
Atkin 1 545—Atkin	Mat	Indiv	5	2	14	1	68
Beecroft Hospital	Mat	Indiv	5	2	14	1	68
Anoka 4 851—Anoka	Ment	State	1 340			1 700	125
Anoka State Asylum	Ment	State	1 340			1 700	125
Barrett 368—Grant	Surg	Indiv	10			2	
Powers Hospital	Surg	Indiv	10			2	
Bertha 490—Todd	Gen	Indiv	18	5	50	6	315
Thiel Hospital	Gen	Indiv	18	5	50	6	315
Buhl 1 634—St Louis	Inst	County	53			39	414
St Louis County Hospital	Inst	County	53			39	414
Caledonia 1 554—Houston	Gen	Indiv	17	8	No data supplied		
Caledonia Hospital	Gen	Indiv	17	8	No data supplied		
Cambridge 1 183—Isanti	MeDe	State	858			876	50
Minnesota Colony for Epilep- tics	MeDe	State	858			876	50
Cloquet 6 782—Carlton	Gen	Indiv	9	4	29	2	12
Epard Hospital	Gen	Indiv	9	4	29	2	12
Cokato 1 125—Wright	Gen	Indiv	12	6	11	7	168
Cokato Hospital	Gen	Indiv	12	6	11	7	168
Detroit Lakes 3 675—Becker	Gen	Indiv	7	2	7	2	56
Detroit Hospital	Gen	Indiv	7	2	7	2	56
Duluth 101 463—St Louis	Inst	County	65			60	1 724
Hearing Hospital	Inst	County	65			60	1 724
Ellsworth 644—Nobles	Gen	Indiv	10	5	13	3	55
Ellsworth Hospital	Gen	Indiv	10	5	13	3	55
Ely 6 156—St Louis	Iso	City	16			2	39
Detention Hospital	Iso	City	16			2	39
Faribault 12 767—Rice	MeDe	State	2 300			2 231	276
Minnesota School for Feeble- minded	MeDe	State	2 300			2 231	276
Glenwood 2 220—Pope	Gen	Part	8	3	21	6	205
Glenwood Hospital	Gen	Part	8	3	21	6	205
Thorson Hospital	Gen	Indiv	8	2	13	3	91
Greenbush 387—Roseau	Gen	Indiv	8	3	29	4	195
General Hospital	Gen	Indiv	8	3	29	4	195
Hastings 5 086—Dakota	MeDe	State	1 090			1 054	52
Hastings State Asylum	MeDe	State	1 090			1 054	52
Latto Hospital	Gen	Indiv	20	5	20		106
St Francis Hospital	Gen	Indiv	15	2	17		138
St Raphael Hospital	Gen	Indiv	16	4	No data supplied		
Hibbing 15 666—St Louis	Iso	City	15			5	60
Hibbing Detention Hospital	Iso	City	15			5	60
Long Prairie 1 854—Todd	Gen	Indiv	10	2	8	2	105
Long Prairie Hospital	Gen	Indiv	10	2	8	2	105
Madella 1 397—Watsonwan	Gen	Indiv	13	4	60	4	195
Madella Hospital	Gen	Indiv	13	4	60	4	195
Minneapolis 464 356—Hennepin	Conv	NPA'ssn	34			15	100
Barton Loring Home for Con- valescents	Conv	NPA'ssn	34			15	100
Homewood Hospital	Conv	NPA'ssn	34			29	226
Lymanhurst Health Center	Conv	City	40			0	40
Minneapolis Sanitarium	N&M	Indiv	12			8	41
Minnesota Sanitarium	N&M	Indiv	12			8	41
Minnesota Soldiers Home Hosp	Inst	State	100			75	293
Parkview Sanatorium	Chr	City	155			156	247
Portland Resthome	N&M	Indiv	10			7	8
Rest Home	Conv	Indiv	14			1	20
Rest Hospital	N&M	Indiv	17			1	140
Saraburst	TB	NPA'ssn	19			10	9
Vocational Hospital	Conv	NPA'ssn	1			29	107
Morris 2 474—Stevens	Gen	NPA'ssn	18		38	7	700
Stevens County Hospital	Gen	NPA'ssn	18		38	7	700
Mudbaden—Scott	Conv	Corp	90			16	1 390
Mudbaden Sulphur Springs	Conv	Corp	90			16	1 390
Owatonna 7 654—Steele	Inst	State	46			18	887
Minnesota State Public School	Inst	State	46			18	887
Parkers Prairie 631—Otter Tail	Surg	Indiv	8			2	97
Leibold Hospital	Surg	Indiv	8			2	97
Pelican Rapids 1 365—Otter Tail	Gen	Indiv	8	4	2	2	4
Dr Boyesen's Hospital	Gen	Indiv	8	4	2	2	4
Pelican Rapids Hospital	Gen	Indiv	7	3	33	2	68
Pipestone 3 459—Pipestone	Gen	I A	36	10	3	25	158
Pipestone Indian Hospital	Gen	I A	36	10	3	25	158
Red Wing 9 629—Goodhue	Inst	State	20			10	935
Minnesota State Training School for Boys	Inst	State	20			10	935
St Cloud 21 000—Stearns	Inst	State	30			7	1 015
Minnesota State Reformatory Ho pital	Inst	State	30			7	1 015
St Paul 2 1 606—Ramsey	TB	CyCo	80			79	101
Children's Preventorium of Ramsey County	TB	CyCo	80			79	101
Mrs Robbins Rest Home	N&M	Indiv	12			5	22
Salvation Army Home and Hospital	Mat	Church	80	10	56	36	19
Samaritan Hospital	Gen	NPA'ssn	27	5	5	10	238
Sauk Center 2 716—Stearns	Gen	Indiv	6	5	9	1	45
Long Ho pital	Gen	Indiv	6	5	9	1	45
Shakopee 2 023—Scott	Conv	Corp	72			22	933
Mudcura Sanitarium	Conv	Corp	72			22	933
Stillwater 7 173—Washington	Inst	State	50			40	495
Minnesota State Prison Ho p	Inst	State	50			40	495
Virginia 11 963—St Louis	Iso	City	37			2	
City Detention Hospital	Iso	City	37			2	
Warroad 1 154—Roseau	Gen	City	12	1	22	6	197
Warroad Ho pital	Gen	City	12	1	22	6	197
Watertown 74—Carver	Gen	Indiv	7	4	34	2	161
Shrader and Lee Hospital	Gen	Indiv	7	4	34	2	161

MINNESOTA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Wayzata 1100—Hennepin	Gen	NPA'ssn	12	3	16	5	189
Minnetonka Hospital	Gen	Indiv	12	3	12	6	386
Wheaton 1270—Traverse	Gen	Indiv	12	3	12	6	386
Wheaton Hospital	Gen	Indiv	12	3	12	6	386
Willmar 6173—Kandiyohti	Gen	Indiv	12	3	12	6	386
Willmar State Asylum	Gen	Indiv	12	3	12	6	386
Worthington 3378—Nobles	Gen	Indiv	12	3	12	6	386
Dolan Hospital	Gen	Indiv	12	3	12	6	386
Summary for Minnesota							
Hospitals and Sanatoriums	102		19,002		14,802		193,591
Related Institutions	97		8,318		7,774		113,501
Totals	219		27,320		22,576		307,092
Refused registration	9		195				

MISSISSIPPI

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Aberdeen 3921—Monroe	Gen	City	22	3	5		
Aberdeen Hospital	Gen	City	22	3	5		
Amory 3214—Monroe	Gen	NPA'ssn	30	20	14	622	
Clmore Sanatorium	Gen	NPA'ssn	50	5	10	54	
Biloxi 14850—Harrison	Gen	NPA'ssn	207		102	1,664	
Biloxi Hospital	Gen	NPA'ssn	207		102	1,664	
Veterans Admin Facility	Gen	Vet	207		102	1,664	
Booneville 1703—Prentiss	Gen	NPA'ssn	50	2	12	48	
North East Mississippi Hosp	Gen	NPA'ssn	50	2	12	48	
Brookhaven 5288—Lincoln	Gen	NPA'ssn	10	7	0	6	400
Kings Daughters Hospital	Gen	NPA'ssn	10	7	0	6	400
Canton 472—Madison	Gen	NPA'ssn	21	10		220	
Madison County Kings Daughters Hospital	Gen	NPA'ssn	21	10		220	
Centerville 1344—Wilkinson	Gen	Part	25	4	17	674	
Feld Memorial Hospital	Gen	Part	25	4	17	674	
Charleston 2014—Lallahatchie	Gen	Indiv	11	2	1	180	
Charleston Hospital	Gen	Indiv	11	2	1	180	
Clarksdale 1004—Coahoma	Gen	NPA'ssn	22	11	4	410	
Clarksdale Hospital	Gen	NPA'ssn	22	11	4	410	
Columbia 4833—Marion	Gen	Indiv	31	3	21	14	1,224
Columbia Clinic Hospital	Gen	Indiv	31	3	21	14	1,224
Columbus 1074—Lowndes	Gen	Indiv	21	1	1	217	
Columbus Hospital	Gen	Indiv	21	1	1	217	
Fite Hospital	Gen	Indiv	21	1	1	217	
Corinth 6220—Alcorn	Gen	Indiv	12	28	4	271	
Corinth Hospital	Gen	Indiv	12	28	4	271	
McRae Hospital	Gen	NPA'ssn	60	21	12	64	
Electric Mill 1084—Kemper	Gen	NPA'ssn	30	6	10	401	
George C. Hixon Memorial Hospital	Gen	NPA'ssn	30	6	10	401	
Greenville 14807—Washington	Gen	NPA'ssn	100	14	14	34	2,120
Kings Daughters Hospital	Gen	NPA'ssn	100	14	14	34	2,120
Greenwood 11122—Leflore	Gen	CyCo	20	8	14	10	563
Greenwood Leflore Hospital	Gen	CyCo	20	8	14	10	563
Crenada 4349—Grenada	Gen	Part	30	4	37	10	838
Crenada General Hospital	Gen	Part	30	4	37	10	838
Gulport 12547—Harrison	Gen	NPA'ssn	60	6	6	Not data supplied	
Kings Daughters Hospital	Gen	NPA'ssn	60	6	6	Not data supplied	
Veterans Admin Facility	Gen	Vet	60	6	6	Not data supplied	
Hattiesburg 18601—Forrester	Gen	Church	71	12	120	19	1,131
Methodist Hospital	Gen	Church	71	12	120	19	1,131
South Mississippi Infirmary	Gen	Indiv	60	11	12		
Houston 1477—Chickasaw	Gen	NPA'ssn	40	2	16	10	562
Houston Hospital	Gen	NPA'ssn	40	2	16	10	562
Jackson 48282—Hinds	Gen	NPA'ssn	79	12	191	21	1,988
Jackson Infirmary	Gen	NPA'ssn	79	12	191	21	1,988
Mississippi Baptist Hospital	Gen	Church	79	12	191	21	1,988
Mississippi State Charity Hospital	Gen	State	121	16	30	6	306
Dr. Willis Walley Hospital	Gen	Corp	61	3	16	14	720
Laurel 18017—Jones	Gen	Indiv	30	8	16	1	1,996
Laurel General Hospital	Gen	Indiv	30	8	16	1	1,996
South Mississippi Charity Hospital	Gen	State	60	6	42	4	1,591
Lexington 2,000—Holmes	Gen	County	21	2	18	6	412
Holmes County Community Hospital	Gen	County	21	2	18	6	412
Macon 2198—Noyes	Gen	Indiv	20	2	10	7	308
Macon Hospital	Gen	Indiv	20	2	10	7	308
McComb 10067—Pike	Gen	Indiv	21	12	57	10	984
McComb City Hospital	Gen	Indiv	21	12	57	10	984
McComb Infirmary	Gen	Indiv	21	12	57	10	984
Meridian 11534—Lauderdale	Gen	Indiv	41	3	39	10	599
Andor on Infirmary	Gen	Indiv	41	3	39	10	599
East Mississippi State Hosp	Gen	State	50	10	8	2	1,893
Natty Herce Hospital	Gen	Indiv	55	6	57	14	1,070
Meridian Sanatorium and Clinic	Gen	Indiv	55	6	57	14	1,070
Dr. T. G. Riley's Hospital and Clinic	Gen	Indiv	55	6	57	14	1,070
Rush's Infirmary	Gen	Indiv	55	6	57	14	1,070
Natchez 13423—Adams	Gen	Corp	80	6	100	40	2,064
Chamberlain Rice Hospital	Gen	Corp	80	6	100	40	2,064
Natchez Charity Hospital	Gen	Corp	80	6	100	40	2,064
Natchez Sanatorium	Gen	Corp	80	6	100	40	2,064
New Albany 3185—Union	Gen	Indiv	30	2	40	8	491
Mayes Hoital	Gen	Indiv	30	2	40	8	491
New Albany Hoital and Clinic	Gen	Indiv	30	2	40	8	491
Newton 2011—Newton	Gen	Corp	25	3	25	6	47
Newton Infirmary	Gen	Corp	25	3	25	6	47

MISSISSIPPI—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Oxford 2890—Lafayette	Gen	Corp	25	5	32	12	742
Bramlett Hospital	Gen	Corp	25	5	32	12	742
Oxford Hospital	Gen	Corp	25	5	32	12	742
Pascagoula 4339—Jackson	Gen	County	24	5	42	9	311
Pascagoula County Hospital	Gen	County	24	5	42	9	311
Philadelphia 2560—Neshoba	Gen	I.A.	28	7	26	18	614
Choctaw Mississippi Hospital	Gen	I.A.	28	7	26	18	614
Philadelphia Hospital	Gen	Indiv	9	4	20	5	287
Picayune 4698—Pearl River	Gen	Indiv	24	2	22	7	21
Martin Sanatorium	Gen	Indiv	24	2	22	7	21
Rosedale 2117—Boliar	Gen	NPA'ssn	10	2	No data supplied		
Kings Daughters Hospital	Gen	NPA'ssn	10	2	No data supplied		
Sanatorium 61—Simpson	Gen	NPA'ssn	10	2	No data supplied		
Mississippi State Tuberculosis Sanatorium	Gen	State	450		311	341	
Starkville 3612—Oktoberbeha	Gen	Indiv	20	2	6	20	
Oktoberbeha Hospital	Gen	Indiv	20	2	6	20	
Lupelo 6361—Lee	Gen	Corp	30	2	12	88	
Tupelo Hospital	Gen	Corp	30	2	12	88	
Tylertown 1112—Walthall	Gen	Indiv	11	2	20	7	10
Tylertown Hospital	Gen	Indiv	11	2	20	7	10
Vicksburg 22943—Warren	Gen	State	100	6	20	72	2,446
Mississippi State Charity Hospital	Gen	State	100	6	20	72	2,446
Vicksburg Hospital	Gen	NPA'ssn	50	6	30	20	148
Vicksburg Infirmary	Gen	NPA'ssn	50	6	30	20	148
Vicksburg Sanatorium and Crawford Street Hospital	Gen	NPA'ssn	70	6	80	38	1,770
Water Valley 3738—Yalobusha	Gen	Part	21	4	10	2	21
Water Valley Hospital	Gen	Part	21	4	10	2	21
West Point 4677—Clay	Gen	Indiv	21	6	30	12	7
Ivy Hospital	Gen	Indiv	21	6	30	12	7
Whitfield—Rankin	Gen	State	2,700		2,341	1,600	
Mississippi State Hospital	Gen	State	2,700		2,341	1,600	
Winona 2607—Montgomery	Gen	NPA'ssn	8	2	20	12	411
Winona Infirmary	Gen	NPA'ssn	8	2	20	12	411
Yazoo City 5779—Yazoo	Gen	NPA'ssn	21	4	11	6	484
Kings Daughters Hospital	Gen	NPA'ssn	21	4	11	6	484
Related Institutions							
Biloxi 14850—Harrison	Gen	State	60		30	20	
Jefferson Davis Soldiers Home	Gen	State	60		30	20	
Clarksdale 10034—Coahoma	Gen	Indiv	12		No data supplied		
Afro American Colored Hosp	Gen	Indiv	12		No data supplied		
Ellisville 2127—Jones	Gen	State	400		200	21	
Ellisville State School	Gen	State	400		200	21	
Greenville 14807—Washington	Gen	NPA'ssn	20		4	10	228
Kings Daughters Hospital (col)	Gen	NPA'ssn	20		4	10	228
Greenwood 11123—Leflore	Gen	Indiv	12		3		
Greenwood Colored Hospital	Gen	Indiv	12		3		
Meridian 31934—Lauderdale	Gen	Indiv	40		24	30	
Kings Daughters Tuberculosis Hospital	Gen	Indiv	40		24	30	
Okolona 2235—Chickasaw	Gen	Indiv	10	2	12	3	100
Wicks Hospital	Gen	Indiv	10	2	12	3	100
Poplarville 1458—Pearl River	Gen	Corp	20	2	No data supplied		
Pearl River County Hospital	Gen	Corp	20	2	No data supplied		
State College 300—Oktoberbeha	Gen	State	44		5	252	
James Z. George Memorial Hosp	Gen	State	44		5	252	
University 10—Lafayette	Gen	State	30		10	220	
University of Mississippi Hosp	Gen	State	30		10	220	
Summary for Mississippi							
Hospitals and Sanatoriums	66		7,332		5,401		54,349
Related Institutions	11		1,899		1,367		1,781
Totals	77		9,231		6,768		56,130
Refused registration	2		72				

MISSOURI

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Bonne Terre 4021—St. Francois	Gen	NPA'ssn	30	5	33	11	280
Bonne Terre Hospital	Gen	NPA'ssn	30	5	33	11	280
Boonville 6435—Cooper	Gen	Church	70	14	74	32	919
St. Joseph's Hospital	Gen	Church	70	14	74	32	919
Butler 2706—Bates	Gen	Indiv	16	2	61	9	417
Butler Memorial Hospital	Gen	Indiv	16	2	61	9	417
California 2384—Moniteau	Gen	Indiv	33	2	6	12	821
Latham Sanatorium	Gen	Indiv	33	2	6	12	821
Canton 2044—Lewis	Gen	Indiv	13	2	14	3	111
Canton Community Hospital	Gen	Indiv	13	2	14	3	111
Cape Girardeau 16227—Cape Girardeau	Gen	Church	50	10	87	30	1,102
St. Francis Hospital	Gen	Church	50	10	87	30	1,102
Southeast Missouri Hospital	Gen	NPA'ssn	70	12	21	42	1,428
Carthage 9736—Jasper	Gen	City	38	6	73	10	86
McCune Brook's Hospital	Gen	City	38	6	73	10	86
Chillicothe 8177—Livingston	Gen	Part	26	0	07	9	112
Chillicothe Hospital	Gen	Part	26	0	07	9	112
Clayton 9615—St. Louis	Gen	County	187	3	418	146	4,077
St. Louis County Hospital	Gen	County	187	3	418	146	4,077
Columbia 14967—Boone	Gen	County	46	4	74	21	942
Boone County General Hosp	Gen	County	46	4	74	21	942
Noyes Hospital	Gen	County	46	4	74	21	942
Parler Memorial Hospital	Gen	County	46	4	74	21	942
State Hospital for Crippled Children	Gen	County	46	4	74	21	942
University Hospitals	Gen	State	100	8	11	60	2,001

MISSOURI—Continued

Hospitals and Sanatoriums	Type of Service	Control	Body	Rated Capacity	Bassinets	Number of Births	Average Patients	Patients Admitted
Barnes Hospital**	Gen	Church	300				264	8 134
Bethesda General Hospital	Gen	N P Ascn	105	15	160	41	1 269	
Central Hospital	Gen	Corp	30	10	100	25	779	
Christian Hospital	Gen	N P Ascn	25	25	275	4	1 575	
City Isolation Hospital	Tbls	City	250		3	162	2 008	
City Sanitarium*	Ment	City	3 645			3 427	6 172	
De Paul Hospital*	Gen	Church	250		719	150	5 611	
Evangelical Deaconess Home and Hospital*	Gen	Church	150	70	450	114	4 064	
Firmen Desloge Hospital**	Gen	Church	275	28		176	4 458	
Frisco Employes Hospital	Indus	N P Ascn	100			56	1 319	
Jewish Hospital**	Gen	N P Ascn	257	3	140	147	4 676	
Josephine Helfkamp Memorial Hospital	Gen	Church	35	10	124	20	815	
Lutheran Hospital*	Gen	Church	150	30	425	8	3 194	
Missouri Baptist Hospital*	Gen	Church	450	41	295	170	4 231	
Missouri Pacific Hospital	Indus	N P Ascn	300			133	3 508	
St. Rose Sanatorium*	T B	Church	135			126	232	
Peoples Hospital (col.)	Gen	N P Ascn	63	5	55	33	341	
Robert Koch Hospital*	T B	City	500			450	287	
St. Ann's Lying In Hospital	Mnt	Church	45	40	457	22	563	
St. Anthony's Hospital*	Gen	Church	200	50	791	139	3 245	
St. John's Hospital*	Gen	Church	254	34	496	208	3 528	
St. Louis Children's Hosp.*	Chil	N P Ascn	205			131	3 675	
St. Louis City Hospital**	Gen	City	550	59	1 56	797	20 361	
St. Louis City Hospital No. 2 (col.)**	Gen	City	285	40	57	299	7 283	
St. Louis Maternity Hosp.*	Mnt	N P Ascn	92	92	150	51	1 525	
St. Luke's Hospital**	Gen	Church	178	32	229	153	2 919	
St. Mary's Hospital**	Gen	Church	250	45	394	180	4 250	
St. Mary's Infirmary (col.)*	Gen	Church	146	14	451	130	2 300	
St. Vincent's Sanitarium	N & M	Church	60			2	2	171
Shriners Hospital for Crippled Children	Orth	Frat	100			99	490	
U. S. Marine Hospital	Gen	U S PH S	100			100	778	
Sedalia 20 506—Pettie								
John H. Bothwell Memorial Hospital	Gen	City	120	12	50	27	990	
Springfield 57 527—Greene								
Burge Hospital	Gen	Church	85	10	107	21	852	
St. John's Hospital	Gen	Church	100	10	225	12	2 253	
Springfield Baptist Hospital	Gen	Corp	100	10	150	44	1 991	
U. S. Hospital for Defective Delinquents	Ment	Fed	705			582	515	
Stella 226—Newton								
C. Cardwell Hospital	Gen	Indiv	20	4	35	8	500	
Trenton 6 092—Crundis								
Collins Hospital	Gen	Indiv	20	2		4		
Wright Hospital	Gen	Indiv	17	4	6		176	
Washington 1 918—Franklin								
St. Francis Hospital	Gen	Church	75	6	101	25	816	
Webb City 6 876—Jasper								
Jasper County Tuberculosis Hospital	T B	County	105			101	103	
Winter Grove 16 457—St. Louis								
Glenwood Sanatorium	N & M	Corp	50			20	61	
West Plains 2 355—Howell								
Christa Hogan Hospital	Gen	Indiv	15	2	12	8	218	
Related Institutions								
Diamond 51—Newton								
Dr. Rife F. Cheatham's Hosp	Gen	Indiv	8			2	40	
Independence 1 296—Jackson								
Vale Sanitarium	N & M	Corp	15			7	7	
Jefferson City 21 506—Cole								
Missouri State Penitentiary	Inst	State	67			58	616	
Kansas City 39 740—Jackson								
Florence Crittenton Home	Mnt	N P Ascn	14	16	22	50	57	
Florence Crittenton Home (col.)	Mnt	N P Ascn	14	16	17	20	73	
Howbridge Training School for Nervous and Backward Children	McDe	Indiv	25			15	17	
Liberty 3 516—Clay								
Missouri Odd Fellows Home Hospital	Inst	Frat	85			65	758	
Marshall 8 103—Saline								
Missouri State School—Leipsy and Feeble-minded	McDe	State	1 211			1 179	44	
Marthasville 394—Warren								
Evangelical Immanuel—Home for Epileptics and Feeble-minded	McDe	Church	155			99	8	
Mountain Grove 2 279—Wright								
Ryan Hospital	Gen	Indiv	7	1	8	3	75	
Parkville 6 56—Platte								
Waverly Hospital	In t	N P A n	22			205		
Pomona 337—Howell								
Pomona Hospital	Gen	Indiv	1	3		3		
Rolla 3 505—Phillips								
St. Charles 10 491—St. Charles	Inst	State	14			2	116	
Evangelical Immanuel Home for Epileptics and Feeble-minded	McDe	Church	142			127	22	
St. James 1 504—Phelps								
State Federal Soldiers Home Hospital	Inst	State	5			31	140	
St. Joseph 50 93—Buchanan								
Sunnyslope Hospital	Tbls	City	22	4		6	210	
St. Louis 521 050—St. Louis City								
City Infirmary	Inst	City	90			80	431	
Hospital of Manic Home	In t	Frat	125			50	130	
Night and Day Re t Camp	Conv	N P A s n	5			50	431	
St. Louis Training School	McDe	City	50			533	41	
Salvation Army Women's Home and Hospital	Mnt	Church	5	0	50	40		

Key to symbols and abbreviations is on page 798

MISSOURI—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Sedalia, 20 806—Pettis	Gen	City	12	2	4	4	101
City Hospital No 2 (col)							
Springfield 57 527—Greene	Gen	County	15			13	21
Greene County Tuberculosis Sanatorium	TB	County	15			13	21
Warrensburg 5 146—Johnson	Gen	Indiv	10	1	12	2	80
Oak Hill Sanitarium	Gen	Part	10		3	2	106
Warrensburg Clinic	Gen	Part	10		3	2	106
Webster Groves 16 487—St Louis	Conv	Frat	30			18	417
Miriam Convalescent Home	Gen	Indiv	7	4	10	2	48
West Plains 3 333—Howell	Gen	Indiv	7	4	10	2	48
Cottage Hospital	Gen	Indiv	7	4	10	2	48
Summary for Missouri							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	122	2,621	20 110	199 462			
	25	2 907	2 437	5 997			
Totals	147	25 528	22 547	205 459			
Refused registration	24	1 191					

MONTANA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Anaconda 12 494—Deerlodge	Gen	Church	60	8	115	27	998
St Ann's Hospital	Gen	Church	60	8	115	27	998
Billings 16 380—Yellowstone	Gen	Church	54	12	203	40	1 399
Billings Deaconess Hospital	Gen	Church	120	12	236	77	1 576
St Vincent's Hospital	Gen	Church	120	12	236	77	1 576
Bozeman 6 850—Gallatin	Gen	Church	40	12	100	32	1 209
Bozeman Deaconess Hospital	Gen	Church	40	12	100	32	1 209
Browning 1 172—Glacier	Gen	I A	31	9	86	29	541
Blackfeet Hospital	Gen	I A	31	9	86	29	541
Butte 39 532—Silver Bow	Gen	Corp	120	12	109	41	1 685
Murray Hospital*	Gen	Corp	120	12	109	41	1 685
St James Hospital*	Gen	Church	141	16	369	84	1 958
Choteau 926—Teton	Gen	Indiv	10	3		5	
Choteau Hospital	Gen	Indiv	10	3		5	
Conrad 1 499—Pondera	Gen	Church	34	10	90	19	700
St Mary's Hospital	Gen	Church	34	10	90	19	700
Crow Agency 113—Big Horn	Gen	I A	22	6	43	23	621
Crow Indian Hospital	Gen	I A	22	6	43	23	621
Deer Lodge 3 510—Powell	Gen	Church	22	6	43	23	621
Montana State Tuberculosis Sanatorium	TB	State	215	30	49	138	169
St Joseph's Hospital	Gen	Church	30	10	49	18	243
Dillon 2 422—Beaverhead	Gen	Corp	22	4	53	8	471
Barrett Hospital	Gen	Corp	22	4	53	8	471
Ft Benton 1 109—Chouteau	Gen	Church	40	6	66	20	492
St Clare Hospital	Gen	Church	40	6	66	20	492
Ft Harrison—Lewis and Clark	Gen	Yct	403			221	879
Veterans Admin Facility	Gen	Yct	403			221	879
Ft Missoula (Missoula P O)—Missoula	Gen	Army	36			20	497
Station Hospital	Gen	Army	36			20	497
Glasgow 2 116—Valley	Gen	Church	80	12	192	48	1 712
Frances Mahon Deaconess Hosp	Gen	Church	80	12	192	48	1 712
Glendive 4 629—Dawson	Gen	County	20	5	31	19	249
Dawson County Hospital	Gen	County	20	5	31	19	249
Northern Pacific Hospital	Gen	NPA's'n	70	6		31	
Great Falls 28 822—Cascade	Gen	Church	290	50	449	146	4 840
Columbia Hospital	Gen	Church	290	50	449	146	4 840
Montana Deaconess Hospital	Gen	Church	100	25	307	111	2 906
Hamilton 1 639—Ravalli	Gen	NPA's'n	36	6	112	17	510
Marcus Daly Memorial Hosp	Gen	NPA's'n	36	6	112	17	510
Hardin 1 169—Big Horn	Gen	Corp	30	6	60	8	306
Hardin General Hospital	Gen	Corp	30	6	60	8	306
Harlem 700—Blaine	Gen	I A	45	8	70	22	470
Ft Belknap Indian Hospital and Sanatorium	Gen	I A	45	8	70	22	470
Havre 6 372—Hill	Gen	Church	41	12	122	32	1 214
Kennedy Deaconess Hospital	Gen	Church	70	9	100	50	1 384
Sacred Heart Hospital	Gen	Church	70	9	100	50	1 384
Helena 11 803—Lewis and Clark	Gen	Church	40	15	143	41	868
St John's Hospital	Gen	Church	40	15	143	41	868
St Peter's Hospital	Gen	NPA's'n	40	10	124	30	838
Jordan 401—Garfield	Gen	Church	18	5	43	10	323
Good Samaritan Hospital	Gen	Church	18	5	43	10	323
Kalspell 6 094—Flathead	Gen	Church	44	6	67	17	649
Kalspell General Hospital	Gen	Church	44	6	67	17	649
Lame Deer 1 520—Rosebud	Gen	I A	47	3	22	17	472
Tongue River Agency Hospital	Gen	I A	47	3	22	17	472
Lewistown 5 208—Fergus	Gen	Church	81	16	143	51	2 020
St Joseph's Hospital	Gen	Church	81	16	143	51	2 020
Libby 1 702—Lincoln	Gen	Indiv	16	4	30	12	300
Libby General Hospital	Gen	Indiv	16	4	30	12	300
Livingston 6 391—Park	Gen	Indiv	22	6	12	12	397
Park Hospital	Gen	Indiv	22	6	12	12	397
Viles City 7 170—Custer	Gen	Church	85	7	60	53	1 400
Viles City Hospital	Gen	Church	85	7	60	53	1 400
Missoula 14 607—Missoula	Indus	NPA's'n	75			33	1 422
Northern Pacific Beneficial Association Hospital	Indus	NPA's'n	75			33	1 422
St Patrick's Hospital	Gen	Church	102	12	188	70	2 340
Thornton Hospital	Gen	Part	78	12	114	21	1 124
Plentywood 1 230—Sheridan	Gen	NPA's'n	18	5	41	10	410
Sheridan Memorial Hospital	Gen	NPA's'n	18	5	41	10	410
Poplar 1 046—Rosevelt	Gen	I A	20	7	80	26	972
Ft Peck Indian School Hosp	Gen	I A	20	7	80	26	972

MONTANA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Roundup 2 577—Musselshell	Gen	Indiv	20	6	20	7	300
Musselshell Valley Hospital	Gen	Indiv	20	6	20	7	300
St Ignatius 375—Lake	Gen	Church	23	6	90	13	800
Holy Family Hospital	Gen	Church	23	6	90	13	800
Sidney 2 010—Richland	Gen	Church	20	6	111	16	683
Sidney Deaconess Hospital	Gen	Church	20	6	111	16	683
Warm Springs, 110—Deerlodge	Ment	State	1 800			1 832	539
Montana State Hospital	Ment	State	1 800			1 832	539
Related Institutions							
Billings 16 380—Yellowstone	Gen	County	14	3	30	10	197
Yellowstone County Hospital	Gen	County	14	3	30	10	197
Butte 39 532—Silver Bow	Inst	County	150	3		134	
Silver Bow County Hospital	Inst	County	150	3		134	
Great Falls 28 822—Cascade	Iso	Co Co	35			No data supplied	
Detention Hospital	Iso	Co Co	35			No data supplied	
Helena 11 803—Lewis and Clark	Mat	NPA's'n	18	16		10	
Florence Crittenton Home	Mat	NPA's'n	18	16		10	
Lewis and Clark County Hosp	Inst	County	32	1		20	
Lewistown 5 308—Fergus	Gen	County	16	4	39	12	219
Fergus County Hospital	Gen	County	16	4	39	12	219
Livingston 6 391—Park	Gen	Indiv	7	7	38	2	66
Robinson Hospital	Gen	Indiv	7	7	38	2	66
Malta, 1 342—Phillips	Gen	Indiv	13	5	15	8	530
Malta Hospital	Gen	Indiv	13	5	15	8	530
Polson 1 450—Lake	Gen	Church	20	10		No data supplied	
St Joseph's Hospital	Gen	Church	20	10		No data supplied	
Red Lodge 3 026—Carbon	Gen	NPA's'n	26	4		5	590
Mt Maurice Hospital and Sanatorium	Gen	NPA's'n	26	4		5	590
Scobey 1 200—Daniels	Gen	Indiv	20	5	25	11	300
Scobey Clinic Hospital	Gen	Indiv	20	5	25	11	300
Twin Bridges 671—Madison	State	State	28	3		3	280
State Orphans Home Hospital	State	State	28	3		3	280
White Sulphur Springs 370—Meagher	Gen	Indiv	12	3	10	3	130
McKay Hospital	Gen	Indiv	12	3	10	3	130
Summary for Montana							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	44	4 804	3 539	43 700			
	13	396	248	3 296			
Totals	57	5 200	3 787	47 002			
Refused registration	6	106					

NEBRASKA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Alnsworth 1 378—Brown	Gen	Indiv	35	5	78	9	419
Alnsworth Hospital	Gen	Indiv	35	5	78	9	419
Alliance 6 669—Box Butte	Gen	Church	80	11	104	64	1 512
St Joseph's Hospital	Gen	Church	80	11	104	64	1 512
Arnold 890—Custer	Gen	Indiv	15	3	5	4	160
Arnold Hospital	Gen	Indiv	15	3	5	4	160
Auburn 3 068—Nemaha	Gen	Indiv	10	4	12	2	128
Auburn Hospital	Gen	Indiv	10	4	12	2	128
Aurora 2 715—Hamilton	Gen	Indiv	16	9	20	7	210
Aurora Hospital	Gen	Indiv	16	9	20	7	210
Beatrice 10 297—Gage	Gen	Indiv	20	5	20	7	164
Beatrice Sanitarium	Gen	Indiv	20	5	20	7	164
Lutheran Hospital	Gen	Church	60	11	117	17	638
Mennonite Deaconess Home and Hospital	Gen	Church	30	10	141	21	579
Broken Bow 2 715—Custer	Gen	Indiv	30	4		7	
Broken Bow Hospital	Gen	Indiv	30	4		7	
Cambridge 1 293—Furnas	Gen	Indiv	20	2	5	2	100
Republican Valley Hospital	Gen	Indiv	20	2	5	2	100
Chadron 4 606—Dawes	Gen	City	23	7	19	7	316
Chadron Municipal Hospital	Gen	City	23	7	19	7	316
Columbus 6 898—Platte	Gen	Church	29	4	59	18	600
Lutheran Good Samaritan Hosp	Gen	Church	130	12	100	100	1 300
St Mary's Hospital	Gen	Church	130	12	100	100	1 300
David City 2 333—Butler	Gen	NPA's'n	13	3	28	4	240
David City Hospital	Gen	NPA's'n	13	3	28	4	240
Fairbury 6 192—Jefferson	Gen	Indiv	15	4	26	6	271
Fairbury Hospital	Gen	Indiv	15	4	26	6	271
Falls City 5 787—Richardson	Gen	Indiv	30	10	17	11	447
Falls City Hospital	Gen	Indiv	30	10	17	11	447
Ft Crook 719—Sarpy	Gen	Army	50			31	890
Stations Hospital	Gen	Army	50			31	890
Genoa 1 089—Nance	Gen	Indiv	10	4	18	2	112
Genoa Hospital	Gen	Indiv	10	4	18	2	112
Grand Island 18 041—Hall	Gen	Church	130	10	189	52	1 751
St Francis Hospital*	Gen	Church	130	10	189	52	1 751
Hartington 1 568—Cedar	Gen	Indiv	16			2	127
St John's Hospital	Gen	Indiv	16			2	127
Hastings 15 490—Adams	Gen	NPA's'n	80	15	204	53	2 024
Mary Lanning Memorial Hospital	Gen	NPA's'n	80	15	204	53	2 024
Imperial 946—Chase	Gen	NPA's'n	15	4	30	3	400
Imperial Community Hosp	Gen	NPA's'n	15	4	30	3	400
Ingelside 20—Adams	Ment	State	1 000			1 510	213
Hastings State Hospital*	Ment	State	1 000			1 510	213
Kearney 8 570—Buffalo	Gen	Church	69	10	87	21	940
Good Samaritan Hospital	Gen	Church	69	10	87	21	940
Hospital for the Tuberculous	TB	State	160			150	160

NEBRASKA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Lincoln 75933—Lancaster	Gen	Church	100	14	243	62	1851
Bryan Memorial Hospital* Green Gables Dr. Benj. F. Bailey Sanatorium	Gen	Church	110	4	19	89	753
Lincoln General Hospital* Lincoln State Hospital	Gen	City	160	20	313	78	2634
Nebraska Orthopedic Hospital St. Elizabeth's Hospital*	Orth	State	122			1273	229
Veterans Admin. Facility	Gen	Church	110			93	147
Lynch 498—Boyd	Gen	Vet	170	20	200	104	4046
Sacred Heart Hospital McCook 6688—Redwillow	Gen	Church	197			182	1184
St. Catherine's of Siena Hosp Minden 1716—Kearney	Gen	Church	20	3	7	5	169
Seelye Hospital	Gen	Church	60	10	90	23	907
Nebraska City 7930—Otoe	Gen	Indiv	20	8	36	6	210
St. Mary's Hospital	Gen	Church	30	10	200	24	1261
Norfolk 10717—Madison	Gen	Church	30	10	200	24	1261
Norfolk State Hospital* Our Lady of Lourdes Hosp	Ment	State	1061			1002	134
Verges Sanitarium	Gen	Church	20	6			8
Oakland 1433—Burt	Gen	Indiv	30	3			8
Oakland Community Hospital	Gen	Indiv	12	3	41	3	217
Omaha 214006—Douglas	Gen	Indiv	12	3	41	3	217
Bishop Clarkson Memorial Hos- pital*	Gen	Church	100	8	176	71	1944
Creghton Memorial St. Joseph's Hospital*	Gen	Church	307	33	559	201	6719
Douglas County Hospital* Douglas County Psychiatric Hospital	Gen	County	400	12	174	331	3619
Evangelical Covenant Hosp* Immanuel Deaconess Institute*	Unit of Douglas County Hospital	Gen	113	12	228	47	2296
Lord Lister Hospital	Gen	Church	122	24	445	97	3967
Lutheran Hospital	Gen	Indiv	100	12	180	53	2400
Lutheran Psychiatric Hospital Nebraska Methodist Epis- copal Hospital and Deaconess Home*	Unit of Lutheran Hospital	Gen	107	8	124	64	2203
St. Catherine's Hospital* Station Hospital	Gen	Church	176	24	414	90	3230
University of Nebraska Hospi- tal*	Gen	Church	130	20	309	100	3480
Ord 2276—Valley	Gen	Army	10			3	168
Ord Hospital	Gen	State	220	20	410	168	3027
Oxford 1150—Furnas	Gen	Indiv	15	2	10	5	247
Oxford General Hospital	Gen	Corp	14	5	16	6	239
Pawnee City 1573—Pawnee	Gen	Indiv	26	4	59	7	612
Pawnee Hospital	Gen	Indiv	26	4	59	7	612
Scottsbluff 8460—Scotts Bluff	Gen	Church	60	10	141	38	1440
West Nebraska Methodist Epis- copal Hospital*	Gen	Church	60	10	141	38	1440
Seward 2737—Seward	Gen	Church	20	5	23	8	285
Morrow and Clark Hospital	Gen	Indiv	12	4	30	4	123
Seward Hospital	Gen	Indiv	20	5	47	8	309
Sidney 3306—Cheyenne	Gen	Indiv	20	3	30	12	446
Taylor Hospital	Gen	Indiv	10	4	26	8	340
Stuart 63—Holt	Gen	Indiv	20	6	73	12	446
Wilson Hospital	Gen	Indiv	20	6	73	12	446
Valentine 1612—Cherry	Gen	Indiv	20	6	73	12	446
Cherry County Hospital	Gen	Indiv	20	6	73	12	446
Wahoo 2689—Saunders	Gen	Indiv	20	6	73	12	446
Community Hospital	Gen	Indiv	20	6	73	12	446
Related Institutions							
Atkinson 1144—Holt	Gen	Indiv	8	2	No data supplied		
Atkinson General Hospital	Gen	Indiv	8	2	No data supplied		
Axtell 328—Kearney	MeDe	Church	100			146	10
Beethaphage Inner Mission	MeDe	State	1302			1220	183
Beatrice 1077—Gage	MeDe	State	1302			1220	183
Nebraska Institution for Feeble- minded	MeDe	State	1302			1220	183
Beemer 571—Cuming	Gen	Indiv	10	2	2	1	63
Beemer Hospital	Gen	Indiv	10	2	2	1	63
Dalton 430—Cheyenne	Gen	Indiv	10	3	18	2	130
Lioness Memorial Hospital	Gen	Indiv	12	2	48	4	480
Farnum 394—Dawson	Gen	Indiv	12	2	48	4	480
Reeves Memorial Hospital	Gen	Indiv	12	2	48	4	480
Leimont 11407—Dodge	Gen	Church	20	6	59	17	800
Lutheran Good Samaritan Hospital	Gen	Church	22	6	60	10	127
Military Avenue Hospital	Gen	Church	14	4		4	
Friend 1214—Saline	Gen	Church	14	4		4	
Lutheran Good Samaritan War- ren Memorial Hospital	Gen	Church	14	4		4	
Genoa 1080—Nance	Gen	Part	0	3	11		67
Emergency Hospital	Gen	Part	0	3	11		67
Grand Island 10011—Hall	Gen	Part	0	3	11		67
Nebraska Soldiers and Sailors Home—Pershing Hospital	Inst	State	100			73	
Hastings 1040—Adams	Gen	Indiv	10	2	3	3	70
Dr. Feibert Hospital	Gen	Indiv	10	2	3	3	70
Hibron 1061—Thayer	Gen	Indiv	10	2	3	3	70
Blue Valley Hospital	Gen	Indiv	10	2	3	3	70
Holtredge 67—Phelps	Gen	Indiv	10	2	3	3	70
Holtredge Hospital	Gen	Indiv	10	2	3	3	70
Kearney 557—Buffalo	Gen	Indiv	10	2	3	3	70
State Industrial School for Boys	Inst	State	20			2	106

NEBRASKA—Continued

Related Institutions	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Kimball 1711—Kimball	Gen	Indiv	12	5	20	5	266
Kimball Hospital	Gen	Part	1	4	32	4	177
Mockett and Evans Hospital	Gen	Part	1	4	32	4	177
Lexington 2062—Dawson	Gen	Indiv	10	3	67	2	120
City General Hospital	Gen	Indiv	10	3	67	2	120
Lincoln 7933—Lancaster	Gen	Indiv	10	3	67	2	120
Isolation Hospital	Gen	Indiv	10	3	67	2	120
Nebraska State Penitentiary	Inst	State	20			8	291
Milford 832—Seward	Inst	State	12	11	30	2	39
Nebraska Industrial Home	Inst	State	12	11	30	2	39
Nebraska Soldiers and Sailors Home Hospital	Inst	State	12	11	30	2	39
Odell 472—Gage	Gen	Indiv	9	3	20	6	193
Odell General Hospital	Gen	Indiv	9	3	20	6	193
Omaha 214006—Douglas	Gen	Indiv	9	3	20	6	193
Orchard 503—Antelope	Gen	Indiv	7	3	3	1	80
Orchard Hospital	Gen	Indiv	7	3	3	1	80
Palmer 588—Merrick	Gen	Indiv	7	3	3	1	80
Coolidge Hospital and Sanat	Gen	Indiv	7	3	3	1	80
Plainview 1216—Pierce	Gen	Indiv	7	3	3	1	80
Plainview General Hospital	Gen	Indiv	7	3	3	1	80
Sutherland 730—Lincoln	Gen	Indiv	7	3	3	1	80
Russell Hospital	Gen	Indiv	7	3	3	1	80
Sutton 1540—Clay	Gen	Indiv	7	3	3	1	80
Sutton Hospital	Gen	Indiv	7	3	3	1	80
Table Rock 673—Pawnee	Gen	Indiv	7	3	3	1	80
McCreary Private Hospital	Gen	Indiv	7	3	3	1	80
Tecumseh 1829—Johnson	Gen	Indiv	7	3	3	1	80
Tecumseh Hospital	Gen	Indiv	7	3	3	1	80
Tekamah 1804—Burt	Gen	Indiv	7	3	3	1	80
Tekamah General Hospital	Gen	Indiv	7	3	3	1	80
Tilden 1106—Madison	Gen	Indiv	7	3	3	1	80
Tilden Hospital	Gen	Indiv	7	3	3	1	80
Walsh 1162—Thurston	Gen	Indiv	7	3	3	1	80
Dr. Picotto Memorial Hospital	Gen	Indiv	7	3	3	1	80
Westpoint 222—Cuming	Gen	Indiv	7	3	3	1	80
St. Joseph Home for Aged and Hospital	Inst	Church	16	2	23	5	280
Summary for Nebraska							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	38	2177	1638	6641			
Totals	103	10349	8074	72996			
Refused registration	18	437					

NEVADA

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Boulder City 5000—Clark	Gen	Indiv	60			23	717
Six Companies Inc. Hospital	Gen	Indiv	60			23	717
East Flg 1507—White Pine	Gen	Indiv	40	7	40	15	215
Steptoe Valley Hospital	Gen	Indiv	40	7	40	15	215
Fiko 3217—Eiko	Gen	County	48	6	63	15	481
Fiko General Hospital	Gen	County	48	6	63	15	481
Ely 3040—White Pine	Gen	County	40	4	30	20	409
White Pine County and Gen- eral Hospital	Gen	County	40	4	30	20	409
Las Vegas 516—Clark	Gen	County	40	6	136	23	1018
Las Vegas Hospital	Gen	County	40	6	136	23	1018
Reno 1879—Washoe	Gen	County	40	6	136	23	1018
Nevada State Hospital for Mental Diseases	Gen	State	400			386	146
St. Mary's Hospital	Gen	Church	52	12	151	46	100
Washoe General Hospital	Gen	County	174	14	196	104	2090
Schurz 70—Mineral	Gen	County	28	3	23	19	377
Walker River Indian Hosp	Gen	IA	28	3	23	19	377
Stewart 412—Ormsby	Gen	IA	32	2	14	18	208
Carson Indian Hospital	Gen	IA	32	2	14	18	208
Tonopah 4144—Nye	Gen	IA	20	3	40	11	361
Tonopah Mines Hospital	Gen	IA	20	3	40	11	361
Winnemucca 1949—Humboldt	Gen	IA	20	3	40	11	361
Humboldt County General Hos- pital	Gen	County	40	4	30	30	600
Related Institutions							
Austin 1000—Lander	Gen	County	10	1	1	2	23
Lander County Hospital	Gen	County	10	1	1	2	23
Battle Mountain 1120—Lander	Gen	County	10	3	10	40	
Battle Mountain General Hosp	Gen	County	10	3	10	40	
Eureka 902—Eureka	Gen	County	10			6	12
Eureka County Hospital	Gen	County	10			6	12
Hawthorne 328—Mineral	Gen	County	14	6	5	70	
Mineral County Hospital	Gen	County	14	6	5	70	
Stewart 412—Ormsby	Gen	IA	32	2	14	18	208
Carson Indian School Hospital	Inst	IA	20			11	269
Yerington 1000—Lyon	Gen	County	10	1	14	72	
Lyon County Hospital	Gen	County	10	1	14	72	
Summary for Nevada							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	13	977	72	7018			
Totals	18	1066	792	8091			
Refused registration	2	320					

NEW HAMPSHIRE

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Berlin 20 018—Cooe	Gen	Church	60	10	122	51	1 538
St Louis Hospital	Gen	Church	60	10	122	51	1 538
Claremont 12 377—Sullivan	Gen	NP Assn	59	11	104	29	847
Claremont General Hospital	Gen	NP Assn	59	11	104	29	847
Concord 25 225—Merrimack	Gen	NP Assn	90	18	282	59	2 017
Margaret Pillsbury General Hospital	Gen	NP Assn	90	18	282	59	2 017
New Hampshire Memorial Hospital	Gen	NP Assn	44	11	167	29	741
New Hampshire State Hospital	Gen	State	2 000			1 940	552
Dover 13 573—Strafford	Gen	Corp	25	7	84	17	577
Hayes Hospital	Gen	Corp	69	15	144	40	1 242
Wentworth Hospital	Gen	NP Assn	40	12	181	51	922
Exeter 4 872—Rockingham	Gen	NP Assn	40	12	181	51	922
Franklin 6 576—Merrimack	Gen	NP Assn	40	12	181	51	922
Franklin Hospital	Gen	NP Assn	40	12	181	51	922
Glencliff 50—Grafton	Gen	NP Assn	40	12	181	51	922
New Hampshire State Sanatorium for the Treatment of Tuberculosis	IB	State	109			40	9
Grasmere 200—Hillsboro	Gen	County	184	10	124	117	1 402
Hillsborough County Central Hospital	Gen	County	184	10	124	117	1 402
Hanover 7 043—Grafton	Gen	NP Assn	128	14	141	81	3 047
Mary Hitchcock Memorial Hospital	Gen	NP Assn	128	14	141	81	3 047
Keene 13 794—Cheshire	Gen	NP Assn	40	15	186	56	1 932
Elliot Community Hospital	Gen	NP Assn	40	15	186	56	1 932
Laconia 12 471—Belknap	Gen	NP Assn	80	24	222	62	2 089
Laconia Hospital	Gen	NP Assn	80	24	222	62	2 089
Lancaster 2 887—Cooe	Gen	NP Assn	15	5	0	11	414
Lancaster Hospital	Gen	NP Assn	15	5	0	11	414
Littleton 4 558—Grafton	Gen	NP Assn	40	12	181	51	922
Littleton Hospital	Gen	NP Assn	40	12	181	51	922
Manchester 76 834—Hillsboro	Chil	City	30		18	24	
Baleh Hospital for Children	Chil	City	30		18	24	
Christina H Parker House	Chil	City	30		18	24	
Elliot Hospital	Chil	City	30		18	24	
Hosp Notre Dame de Lourdes	Chil	City	30		18	24	
Luey Hastings Hospital	Chil	City	30		18	24	
Our Lady of Perpetual Help Hospital	Chil	City	30		18	24	
Sacred Heart Hospital	Chil	City	30		18	24	
Nashua 31 467—Hillsboro	Gen	NP Assn	77	16	185	54	1 911
Nashua Memorial Hospital	Gen	NP Assn	77	16	185	54	1 911
St Joseph's Hospital	Gen	Church	87	17	190	68	2 211
New London 812—Merrimack	Gen	NP Assn	11	4	40	4	157
New London Hospital	Gen	NP Assn	11	4	40	4	157
Newport 4 609—Sullivan	Gen	NP Assn	20	5	70	40	
Carrie F Wright Memorial Hospital	Gen	NP Assn	20	5	70	40	
North Conway 92—Carroll	Gen	NP Assn	30	6	81	19	66
Memorial Hospital	Gen	NP Assn	30	6	81	19	66
Pembroke 30—Merrimack	IB	Indiv	100			80	82
Pembroke Sanatorium	IB	Indiv	100			80	82
Peterboro 2 521—Hillsboro	Gen	NP Assn	19	6	82	10	386
Peterboro Hospital	Gen	NP Assn	19	6	82	10	386
Plymouth 2 440—Grafton	Gen	NP Assn	30	5	61	16	543
Emily Baleh and Soldiers and Sailors Memorial Hospital	Gen	NP Assn	30	5	61	16	543
Portsmouth 14 495—Rockingham	Gen	NP Assn	30	16	273	48	1 212
Portsmouth Hospital	Gen	NP Assn	30	16	273	48	1 212
U S Naval Hospital	Gen	NP Assn	30	16	273	48	1 212
Rochester 10 909—Strafford	Gen	NP Assn	26	9	102	19	1 060
Trisbie Memorial Hospital	Gen	NP Assn	26	9	102	19	1 060
Whitefield 1 693—Cooe	Gen	NP Assn	40	8	76	17	902
Morrison Hospital	Gen	NP Assn	40	8	76	17	902
Wolfeboro 2 338—Carroll	Gen	NP Assn	31	6	97	20	761
Huggins Hospital	Gen	NP Assn	31	6	97	20	761
Woods Hole 1 127—Grafton	Gen	NP Assn	28	8	80	15	703
Cottage Hospital	Gen	NP Assn	28	8	80	15	703

Related Institutions

Epping 1 672—Rockingham	Gen	County	50	4	13	40	130
Rockingham County Hospital	Gen	County	50	4	13	40	130
Exeter 4 823—Rockingham	Inst	NP Assn	53			19	911
Lamont Infirmary	Inst	NP Assn	53			19	911
Franconia 514—Crafter	McDe	Part	16			6	
The Johnsons	McDe	Part	16			6	
Haverhill 3 665—Grafton	Inst	Gen	26	4	18	26	17
Grafton County Hospital	Inst	Gen	26	4	18	26	17
Laconia 12 471—Belknap	McDe	State	560			50	68
Laconia State School	McDe	State	560			50	68
Lebanon 7 073—Grafton	Gen	NP Assn	9	4	61	5	202
Alice Peck Day Memorial Hospital	Gen	NP Assn	9	4	61	5	202
Manchester 76 834—Hillsboro	IB	City	67			50	
Manchester Isolation Hospital	IB	City	67			50	
Portsmouth 14 495—Rockingham	Inc	NP Assn	4			42	1
Mark H Wentworth Home for Chronic Invalids	Inc	NP Assn	4			42	1
Tilton 1 712—Belknap	Inst	State	30			7	48
New Hampshire Soldiers Home	Inst	State	30			7	48

Summary for New Hampshire

Hospital and Sanatoriums	Number	Bed	Average Patients	Patients Admitted
Hospital and Sanatoriums	36	4 161	2 22	20 336
Related Institution	9	841	71	1 620
Totals	45	5 002	2 295	21 956
Refused registration	0			

NEW JERSEY

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Allenwood 166—Monmouth	IB	County	100			101	1 0
Allenwood Sanatorium and Monmouth County Hospital for Tuberculosis	IB	County	100			101	1 0
Atlantic City 66 198—Atlantic	Gen	NP Assn	240	6	8.0	194	6 04
Atlantic City Hospital	Gen	NP Assn	240	6	8.0	194	6 04
Children's Seashore House at Atlantic City for Invalid Children	Orth	NP Assn	50			19	2 42
Bayonne 88 949—Hudson	Gen	NP Assn	170	50	3.9	1 9	4 014
Bayonne Hospital and Dispensary	Gen	NP Assn	170	50	3.9	1 9	4 014
Swiney Sanatorium	Gen	Indiv	16	6	30	1	161
Beach Haven 710—Ocean	Gen	Indiv	16	6	30	1	161
Seashore Branch of Babies Hospital	Unit of Babies Hospital	Philadelphia					
Belle Mead 51—Somerset	Gen	NP Assn	40			40	16
Belle Mead Sanat and Farm	Gen	NP Assn	40			40	16
Belleville 26 974—Essex	Gen	NP Assn	40			40	16
Essex County Hospital for Contagious Diseases	Gen	NP Assn	40			40	16
Bernardsville 3 6—Somerset	Gen	Corp	40			12	91
Shannon Lodge	Gen	Corp	40			12	91
Boundbrook 7 012—Somerset	Gen	Corp	30	10	39	18	701
Boundbrook Hospital	Gen	Corp	30	10	39	18	701
Bridgeton 1 609—Cumberland	Gen	NP Assn	80	16	187	41	1 021
Bridgeton Hospital	Gen	NP Assn	80	16	187	41	1 021
Brown Mills 310—Burlington	IB	NP Assn	40			54	101
Deborah Sanatorium	IB	NP Assn	40			54	101
Camden 118 700—Camden	Gen	NP Assn	60	60	1 427	249	7 851
Cooper Hospital	Gen	NP Assn	60	60	1 427	249	7 851
Marion Childs Hospital for Children	Unit of West Jersey Homeopathic Hospital						
West Jersey Homeopathic Hospital	Unit of West Jersey Homeopathic Hospital						
Cedar Grove 3 000—Essex	Gen	NP Assn	207	0	876	18	5 010
Essex County Hospital	Gen	NP Assn	207	0	876	18	5 010
Dover 10 031—Morris	Gen	NP Assn	72	15	520	57	1 907
Dover General Hospital	Gen	NP Assn	72	15	520	57	1 907
Dumont 2 861—Bergen	Gen	Indiv	12	5	18	3	170
Dumont Private Hospital	Gen	Indiv	12	5	18	3	170
East Orange 68 020—Essex	Gen	NP Assn	60	25	509	60	2 184
Homeopathic Hospital of Essex County	Gen	NP Assn	60	25	509	60	2 184
Elizabeth 114 899—Union	Gen	Church	160			112	1 891
Alexian Brothers Hospital	Gen	Church	160			112	1 891
Elizabeth General Hospital and Dispensary	Gen	NP Assn	190	3	673	169	5 377
St Elizabeth Hospital	Gen	Church	206	44	641	170	760
Englewood 17 001—Bergen	Gen	NP Assn	196	42	781	169	5 211
Englewood Hospital	Gen	NP Assn	196	42	781	169	5 211
Et Hancock—Monmouth	Gen	Army	50			17	1 611
Station Hospital	Gen	Army	50			17	1 611
Franklin 4 176—Sussex	Gen	NP Assn	26	6	80	1	411
Franklin Hospital	Gen	NP Assn	26	6	80	1	411
Freehold 6 894—Monmouth	Gen	Indiv	15	6	20	5	141
Freehold Hospital	Gen	Indiv	15	6	20	5	141
Glen Gardner 5 044—Huntdon	IB	State	473			402	4 088
New Jersey State Sanatorium	IB	State	473			402	4 088
Grenloch 20—Camden	Gen	County	150			141	7 888
Camden County General Hospital	Gen	County	150			141	7 888
Camden County Hospital for Mental Diseases	Gen	County	150			141	7 888
Lakeland Sanatorium	IB	County	200			618	19
Greystone Park—Morris	Gen	State	4 554			4 68	1 227
New Jersey State Hospital	Gen	State	4 554			4 68	1 227
Hackensack 24 68—Bergen	Gen	NP Assn	270	0	890	169	5 041
Hackensack Hospital	Gen	NP Assn	270	0	890	169	5 041
Hoboken 5 961—Hudson	Gen	Church	40	50	562	211	4 117
St Mary Hospital	Gen	Church	40	50	562	211	4 117
Irvine 5 733—Essex	Gen	City	79	17	308	57	2 097
Irvine General Hospital	Gen	City	79	17	308	57	2 097
Jersey City 316 710—Hudson	Gen	Church	185	18	574	142	3 908
Christ Hospital	Gen	Church	185	18	574	142	3 908
Fairmount Hospital	Gen	NP Assn	60	12	120	17	742
Greenville Hospital	Gen	NP Assn	60	12	120	17	742
Hilltop Sanatorium	Gen	Corp	19	10	18	250	
Jersey City Hospital	Gen	City	1 200			1 011	19 076
Margaret Hague Maternity Hospital	Mat	County	272	284	1 796	18	6 144
St Francis Hospital	Mat	County	272	284	1 796	18	6 144
St Francis Hospital	Mat	County	272	284	1 796	18	6 144
Hearny (Arlington P O) 40 710—Hudson	Gen	NP Assn	56	15	15	57	1 914
West Hudson Hospital	Gen	NP Assn	56	15	15	57	1 914
Lakewood 8 000—Ocean	Gen	NP Assn	60	10	15	57	1 978
Paul Kimball Hospital	Gen	NP Assn	60	10	15	57	1 978
Long Branch 18 390—Monmouth	Gen	NP Assn	90	0	217	7	2 000
Dr E C Hazard Hospital	Gen	NP Assn	90	0	217	7	2 000
Monmouth Memorial Hospital	Gen	NP Assn	177	0	541	136	4 000
Lyons—Somerset	Gen	NP Assn	177	0	541	136	4 000
Veterans Admin Facility	Gen	NP Assn	177	0	541	136	4 000
Marlboro 410—Monmouth	Gen	NP Assn	177	0	541	136	4 000
New Jersey State Hospital	Gen	NP Assn	177	0	541	136	4 000
Midland Park 3 638—Bergen	Gen	NP Assn	120			163	401
Christian Sanatorium	Gen	NP Assn	120			163	401
Millville 14 700—Cumberland	Gen	NP Assn	39	6	98	21	84
Millville Hospital	Gen	NP Assn	39	6	98	21	84
Montclair 42 017—Essex	Gen	NP Assn	61	15	211	22	1 241
Montclair Community Hospital	Gen	NP Assn	61	15	211	22	1 241
Mountainside Hospital	Gen	NP Assn	294	56	617	169	5 377
St Vincent's Hospital	Gen	Church	46	12	137	12	1 001
Morristown 1 197—Morris	Gen	Church	14	22	28	78	2 146
All Souls Hospital	Gen	Church	14	22	28	78	2 146
Morristown Memorial Hospital	Gen	NP Assn	140	20	215	89	2 401
Shonghum Mountain Sanat	IB	County	50			2	45

NEW JERSEY—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassinetts	Number of Births	Average Patients	Patients Admitted
Mt Holly 5762—Burlington	Gen	NPAsen	123	18	71	94	9366
Burlington County Hospital**	Gen	NPAsen	136	27	407	112	3466
Neptune 228—Monmouth	Gen	NPAsen	60	4	22	32	1077
Fitzkin Memorial Hospital**	Gen	NPAsen	24	4	22	7	198
Newark 417—Fessev	Chil	NPAsen	60	4	22	32	1077
Babies Hospital Cont Memo	Gen	NPAsen	24	4	22	7	198
Community Hospital (col)	Orth	NPAsen	110			75	347
Hospital and Home for Crup	Gen	NPAsen	110			75	347
pleid Children	Orth	NPAsen	110			75	347
Hospital of St. Barnabas and	Cen	Church	215	46	779	150	5443
for Women and Children**	Cen	Corp	215	46	779	150	5443
Lincoln Hospital	Cen	Corp	215	46	779	150	5443
Newark Beth Israel Hosp**	Gen	NPAsen	10	12	140	7	704
Newark City Hospital**	Gen	NPAsen	10	12	140	7	704
Newark Fye and Ear Inflrm	Cen	City	640	60	100	618	15923
ary*	Gen	NPAsen	60			42	256
Newark Memorial Hospital**	Gen	NPAsen	171	0	412	76	2063
Presbyterian Hospital**	Gen	NPAsen	214			11	456
St James Hospital**	Cen	Church	10	18	81	90	2458
St Michael's Hospital*	Cen	Church	300	17	182	184	5071
New Brunswick 3455—Middlesex	Cen	NPAsen	92	18	195	40	1777
Middlesex General Hospital*	Cen	Church	179	1	174	167	585
St Peter's General Hospital**	Cen	Church	179	1	174	167	585
New Lisbon 131—Burlington	IB	County	121			109	144
Fairview Sanatorium	IB	County	121			109	144
Newton 5401—Sussex	Cen	NPAsen	4	7	7	18	619
Newton Memorial Hospital	Cen	NPAsen	4	7	7	18	619
Northfield 2804—Atlantic	Ment	County	400			12	150
Atlantic County Hospital for	IB	County	0			48	7
Mental Diseases	IB	County	0			48	7
Atlantic County Hospital for	IB	County	0			48	7
Tuberculous Diseases	IB	County	0			48	7
Oceanport 182—Monmouth	Gen	Army	6	2	24	20	726
Station Hospital	Gen	Army	6	2	24	20	726
Orange 3539—Fessev	Orth	NPAsen	36			21	750
New Jersey Orthopaedic Hospi	Cen	NPAsen	22	7	1072	234	696
tal and Dispensary*	Cen	Church	108	42	11	12	2434
Orange Memorial Hospital**	Cen	Church	108	42	11	12	2434
St Mary's Hospital*	Cen	Church	108	42	11	12	2434
Passaic 6290—Passaic	Cen	NPAsen	50	16	198	29	1122
Beth Israel Hospital	Cen	NPAsen	50	16	198	29	1122
Passaic General Hospital**	Cen	NPAsen	900	21	601	121	3885
St Mary's Hospital**	Cen	Church	164	6	64	11	3072
Paterson 133513—Passaic	Gen	NPAsen	10	10	419	105	2868
Nathan and Miriam Barnert	Cen	NPAsen	252	44	177	177	5716
Memorial Hospital**	Cen	NPAsen	418	40	70	240	5707
Paterson General Hospital**	IB	County	225			219	261
St Joseph's Hospital**	IB	County	225			219	261
Valley View Sanatorium	IB	County	225			219	261
Perth Amboy 43716—Middlesex	Cen	NPAsen	176	18	471	122	3716
Perth Amboy General Hospo	Cen	NPAsen	176	18	471	122	3716
Phillipsburg 19000—Warren	Gen	NPAsen	10	10	140	37	1000
Warren Hospital	Gen	NPAsen	10	10	140	37	1000
Plainfield 3442—Union	Gen	NPAsen	240	3	764	185	1671
Muhlenberg Hospital**	Gen	NPAsen	240	3	764	185	1671
Point Pleasant 208—Ocean	Cen	NPAsen	24	4	60	14	569
Point Pleasant Hospital	Cen	NPAsen	24	4	60	14	569
Princeton 6992—Mercer	Cen	NPAsen	56	1	119	24	1008
Princeton Hospital	Cen	NPAsen	56	1	119	24	1008
Rahway 16011—Union	Gen	NPAsen	100	20	241	46	1476
Rahway Memorial Hospital	Gen	NPAsen	100	20	241	46	1476
Red Bank 1162—Monmouth	Gen	NPAsen	25	10	158	16	596
Riverview Hospital	Gen	NPAsen	25	10	158	16	596
Ridgewood 19188—Bergen	IB	County	400			272	859
Bergen Pines Bergen County	IB	County	400			272	859
Hospital	IB	County	400			272	859
Riverside 4010—Burlington	Cen	NPAsen	40	10	22	17	297
Zurbrugg Memorial Hospital	Cen	NPAsen	40	10	22	17	297
Salem 8047—Salem	Cen	NPAsen	5	9	501	50	1160
Salem County Memorial Hosp	Cen	NPAsen	5	9	501	50	1160
Scotch Plains 1010—Union	IB	County	400			366	24
Bonnie Burn Sanatorium	IB	County	400			366	24
Seaucus 890—Hudson	IB	County	400			366	24
Hudson County Contagious	IB	County	400			366	24
Disea e Hospital	IB	County	400			366	24
Hudson County Hospital	IB	County	400			366	24
Hudson County Hospital for	IB	County	400			366	24
Mental Diseases	IB	County	400			366	24
Hudson County Tuberculosis	IB	County	400			366	24
Hospital and Sanatorium*	IB	County	400			366	24
Skillman 23—Somerset	IB	County	400			366	24
New Jersey State Village for	IB	County	400			366	24
Epileptics	IB	County	400			366	24
Somers Point 2077—Atlantic	Cen	NPAsen	6	9	91	24	836
Atlantic Shores Hospital	Cen	NPAsen	6	9	91	24	836
Somerville 825—Somerset	Cen	NPAsen	74	12	287	57	3088
Somerset Hospital	Cen	NPAsen	74	12	287	57	3088
South Amboy 8476—Middlesex	Gen	NPAsen	3	6	36	18	523
South Amboy Memorial Hosp	Gen	NPAsen	3	6	36	18	523
Summit 1456—Union	Nerv	Corp	42			20	128
Fair Oaks Sanatorium	Nerv	Corp	42			20	128
Overlook Hospital	Nerv	Corp	42			20	128
Sussex 1415—Sussex	Cen	City	22	5	36	7	21
Alexander Inn Hospital	Cen	City	22	5	36	7	21
Teaneck 308—Bergen	Gen	Church	179	41	571	125	3155
Holy Name Hospital**	Cen	Corp	50	10	1	2	480
Trenton 1230—Mercer	Gen	NPAsen	217	37	604	127	4494
Charles Private Hospital	Gen	NPAsen	217	37	604	127	4494
Mercer Hospital**	Gen	NPAsen	217	37	604	127	4494
New Jersey State Hospital	Ment	State	225			2704	590
Orthopaedic Hospital and Di	Orth	NPAsen	50			26	256
gnosis	Orth	NPAsen	50			26	256
St. Israel Hospital**	Gen	Church	275	29	48	105	488

NEW JERSEY—Continued

Hospitals and Sanatoriums		Type of Service	Control	Beds Rated Capacity	Bassinetts	Number of Births	Average Patients	Patients Admitted
Trenton Municipal Hospital	City	TBIs	City	235	30	2	260	520
William McKinley Memorial Hospital	Gen	NPAsen	NPAsen	116	30	45	90	2541
Union City 5869—Hudson	Gen	Corp	Corp	0	15	43	6	283
Verona 7161—Sussex	TB	County	County	470			414	432
Ex Mount Sanatorium	Gen	NPAsen	NPAsen	8	15	No data	1	supplied
Vineland 7506—Cumberland	Gen	NPAsen	NPAsen	171	20	132	100	3072
Newcomb Hospital	Gen	NPAsen	NPAsen	171	20	132	100	3072
Weehawken (Union City P O) 14807—Hudson	Gen	NPAsen	NPAsen	171	20	132	100	3072
North Hudson Hospital	Gen	NPAsen	NPAsen	171	20	132	100	3072
Woodbury 8172—Gloucester	Gen	Indiv	Indiv	10	5	28	8	253
Brewer Hospital	Gen	Indiv	Indiv	10	5	28	8	253
Underwood Hospital	Gen	Corp	Corp	42	21	249	50	1650
Related Institutions								
Atlantic City 66198—Atlantic	Drug	Indiv	Indiv	2			20	134
Dr. Leonard's Private Sanit	Indiv	Indiv	Indiv	2			20	134
Municipal Hospital	Indiv	Indiv	Indiv	2			20	134
Bridgeton 15699—Cumberland	Ment	County	County	219			206	60
Cumberland County Hospital for Insane	Ment	County	County	219			206	60
Brown's Mills 913—Burlington	TB	Corp	Corp	2			4	42
Brown's Mills Nursing Cottage	TB	Indiv	Indiv	2			4	42
Mrs. Leonard's Manor Nursing Cottage	TB	Indiv	Indiv	2			4	42
Sycamore Hall Sanatorium	TB	Indiv	Indiv	2			4	42
Burlington 10544—Burlington	Inst	Frat	Frat	50			30	310
Masonic Home	Inst	Frat	Frat	50			30	310
Caldwell 5144—Sussex	Conv	NPAsen	NPAsen	40			2	762
Theresa Grotta Home for Convalecents	Conv	NPAsen	NPAsen	40			2	762
Camden 118700—Camden	IB	County	County	100			2	349
Municipal Hospital for Contagious Diseases	IB	County	County	100			2	349
Chatsworth 962—Burlington	IB	Indiv	Indiv	50			4	6
The Pines Sanatorium	IB	Indiv	Indiv	50			4	6
Larmingdale 329—Monmouth	TB	NPAsen	NPAsen	247			17	624
Tuberculosis Preventorium for Children	TB	NPAsen	NPAsen	247			17	624
Haddonfield 8537—Camden	MeDe	NPAsen	NPAsen	10			98	20
Bancroft School	MeDe	NPAsen	NPAsen	10			98	20
Jamansbury 2048—Middlesex	Inst	State	State	29			56	1277
New Jersey State Home for Boys	Inst	State	State	29			56	1277
Jersey City 31671—Hudson	Mat	Church	Church	8	8	52	6	61
Salvation Army Door of Hope Home and Hospital	Mat	Church	Church	8	8	52	6	61
Lakewood 8000—Ocean	N&M	Indiv	Indiv	14			10	7
Lakewood Sanatorium	N&M	Indiv	Indiv	14			10	7
Longport 222—Atlantic	Orth	Frat	Frat	115			22	61
Betty Bacharach Home for Afflicted Children	Orth	Frat	Frat	115			22	61
Menlo Park 35—Middlesex	Inst	State	State	100			74	146
New Jersey Home for Disabled Soldiers	Inst	State	State	100			74	146
Morris 15197—Morris	Conv	Corp	Corp	90			40	16
Morris Institute	Conv	Corp	Corp	90			40	16
Newark 4423—Fessev	Mat	NPAsen	NPAsen	70	1		18	49
Florence Crittenton Home	Mat	NPAsen	NPAsen	70	1		18	49
Newark City Almshouse	Inst	City	City	40			40	48
Newark Convalescent Hospital	Conv	City	City	103			101	
New Brunswick 3155—Middlesex	Inst	NPAsen	NPAsen	12			58	
Rutgers Infirmary	Inst	NPAsen	NPAsen	12			58	
Newfoundland 64—Morris	IB	Corp	Corp	60			71	60
Idyllease Sanatorium	IB	Corp	Corp	60			71	60
New Lisbon 131—Burlington	Ment	County	County	268			261	75
Burlington County Hospital for Insane	Ment	County	County	268			261	75
State Colony for Feeble-minded Males	MeDe	State	State	768			768	132
Northfield 2804—Atlantic	Inst	County	County	125			80	45
Atlantic County General Hosp	Inst	County	County	125			80	45
Ocean Grove 3056—Monmouth	Inst	Church	Church	17			15	40
Methodist Episcopal Home for Aged	Inst	Church	Church	17			15	40
Passaic 6290—Passaic	IB	County	County	2	2		3	69
Passaic Municipal Hospital	IB	County	County	2	2		3	69
Paterson 15837—Passaic	IB	County	County	110			85	287
Paterson City Hospital	IB	County	County	110			85	287
Princeton 6992—Mercer	Inst	NPAsen	NPAsen	0			17	1488
Isabella McCollum Infirmary of Princeton University	Inst	NPAsen	NPAsen	0			17	1488
Rahway 16011—Union	Inst	State	State	16			7	292
New Jersey Reformatory Ho-p	Inst	State	State	16			7	292
Roseland 716—Sussex	N&M	Corp	Corp	2			20	71
Mountain View Re t	N&M	Corp	Corp	2			20	71
Sea Isle City 50—Cape May	N&M	Corp	Corp	2			20	71
Sea Isle Hospital and Training School	N&M	Corp	Corp	2			20	71
Totowa (Little Falls P O) 4600—Passaic	MeDe	State	State	605			71	
State Training School	MeDe	State	State	605			71	
Trenton 12356—Mercer	Inst	State	State	47			26	8
New Jersey State Prison Hosp	Inst	State	State	47			26	8
State Home for Girls	Inst	State	State	47			26	8
Upper Montclair—Sussex	Gen	Part	Part	10			7	54
Montclair Sanitarium	Gen	Part	Part	10			7	54
Vineland 7506—Cumberland	Gen	Part	Part	10			7	54
Maplehurst School	MeDe	Indiv	Indiv	17			16	16
New Jersey Memorial Home for Disabled Soldiers Sailors Marines and Their Wives and Widows	Inst	State	State	60			78	344
Training School at Vineland	MeDe	NPAsen	NPAsen	1423			1317	67
Vineland State School	MeDe	State	State	1423			1317	67

NEW JERSEY—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Bassineets	Number of Births	Average Patients	Patients Admitted
West Englewood 2 207—Bergen Englewood Sanitarium (Lyn wood Lodge)	N & M	Corp	40			15	17
Woodbine 2 164—Cape May Woodbine Colony for Feeble minded Males	MeDe	State	666			608	105
Summary for New Jersey							
Hospitals and sanatoriums	123	34	471	28	560	200	618
Related institutions	44	6	58	5	490	9	439
Totals	167	41	554	34	1050	209	1057
Refused registration	9		177				

NEW MEXICO

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassineets	Number of Births	Average Patients	Patients Admitted
Albuquerque 26 570—Bernalillo Albuquerque Indian Sanatorium	TB	I A	100			89	281
A T & S F Hospital	Indus	NPA's'n	67			27	321
Children's Home and Hospital	Orth	NPA's'n	10	10		10	190
Methodist Sanatorium	TB	Church	60			49	93
St Joseph Sanatorium and Hospital	G & TB	Church	196	12	204	112	2 519
Southwestern Presbyterian Sanatorium	G & TB	Church	140	12	223	87	1 770
U S Indian School Hospital	Gen	I A	77	8	36	46	1 141
Veterans Admin Facility	G & TB	Vet	209			237	1 464
Black Rock (Zuni P O)—McKinley Zuni Sanatorium	Gen	I A	17	2	6	8	315
Carlsbad 3 708—Eddy St Francis Hospital	Gen	Church	35	5	90		848
Clayton 2 018—Union St Joseph Hospital	Gen	Church	20	5	20	7	362
Clovis 8 027—Curry A T & S F Hospital	Indus	NPA's'n	32			13	237
Baptist Hospital	Gen	Church	20	4	10	8	440
Crownpoint 52—McKinley Eastern Navajo Agency Hosp	Gen	I A	32	4	28	21	583
Dawson 2 662—Colfax Phelps Dodge Corporation Hospital	Gen	Corp	30	4	26	6	181
Deming 3 377—Luna Deming Ladies Hospital	Gen	NPA's'n	24	3	12	4	237
Holy Cross Sanatorium	TB	Church	183			57	55
Dulce 101—Rio Arriba Jicarilla Agency Hospital	Gen	I A	19	0	9	16	160
Farmlington 1 300—San Juan San Juan Episcopal Indian Mission Hospital	Gen	Church	16	2	4	7	132
San Juan Hospital	Gen	NPA's'n	18	4	14	6	340
Ft Bayard 509—Grant Veterans Admin Facility	G & TB	Vet	400			216	816
Ft Stanton 218—Lincoln U S Marine Hospital	TB	LSPHS	270			204	116
Ft Wingate 14—McKinley Charles H Burke Hospital	Gen	I A	30	4	5	11	440
Gallup 5 992—McKinley St Mary's Hospital	Gen	Church	60	7	60	29	2 091
Gardiner 1 000—Colfax Gardiner Hospital	Indus	NPA's'n	40			11	109
Las Vegas 4 719—San Miguel Las Vegas Hospital (Carpenter Memorial)	Gen	NPA's'n	20	4	27	11	510
New Mexico State Hospital	Ment	State	667			717	203
St Anthony's Sanitarium and Hospital	G & TB	Church	46	4	18	18	289
Mescalero 175—Otero Mescalero Indian Hospital	Gen	I A	31	4	25	14	889
Raton 6 000—Colfax New Mexico Miners Hospital	Gen	State	46	5	33	10	427
Rehoboth 170—McKinley Rehoboth Mission Hospital	Gen	Church	30	7	80	30	520
Roswell 11 173—Chaves St Mary's Hospital	Gen	Church	60	8	161	20	864
Santa Fe 11 176—Santa Fe St Vincent's Sanatorium and Hospital	G & TB	Church	80	9	101	37	1 020
Sunmount Sanatorium	TB	Corp	50			21	04
U S Indian Hospital	Gen	I A	70	8	24	40	970
Santa Rita 1 000—Grant Nevada Consolidated Copper Company Hospital	Gen	NPA's'n	50	8	60	8	201
Shiprock 161—San Juan Northern Navajo Hospital	Gen	I A	40	4	30	46	1 400
Silver City 3 019—Grant Grant County Hospital	Gen	NPA's'n	24	0	47	9	536
Toadlena 27—San Juan Toadlena Hospital	Gen	I A	14	2	19	360	
Valmora—Mora Valmora Sanatorium	TB	NPA's'n	70	1	3	30	58
Related Institutions							
Alamogordo 3 000—Otero Rousseau Hospital	Gen	Part	8	1		5	
Dixon 301—Rio Arriba Brooklyn Cottage Hospital	Gen	Church	10	4	58	5	236

NEW MEXICO—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Bassineets	Number of Births	Average Patients	Patients Admitted
Dulce 101—Rio Arriba Jicarilla Sanatorium	TB	I A	56			04	83
Hobbs 598—Lea Hobbs General Hospital	Gen	Indiv	10	3	10	6	200
Lordsburg 2 069—Hidalgo De Moss Hospital	Gen	Indiv	13	2	No data supplied		
Lordsburg Hospital	Gen	Corp	14	3	23	2	409
Los Lunas 513—Valencia New Mexico Home and Training School for Mental Defectives	MeDe	State	73			67	5
Santa Fe 11 176—Santa Fe New Mexico Penitentiary Hosp	Inst	State	00			20	181
Springer 907—Colfax Springer Hospital	Gen	Indiv	10	3	18	2	76
Taos, 1 220—Taos Taos Indian Hospital	Gen	I A	10	3		5	170
Tohatchi 2 000—McKinley Tohatchi General Hospital	Gen	I A	20	4	18	22	701
Summary for New Mexico							
Hospitals and sanatoriums	40	3	582	2	300	23	18
Related institutions	10		272		189		2 222
Totals	50	3	854	2	489	23	401
Refused registration	1		5				

NEW YORK

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassineets	Number of Births	Average Patients	Patients Admitted
Albany 127 412—Albany Albany Hospital**	Gen	NPA's'n	550	40	670	470	10 467
Anthony N Brady Maternity Hospital	Mat	Church	56	60	1 109	45	1 214
Child's Hospital	Chil	Church	60			47	474
Memorial Hospital*	Gen	NPA's'n	120	16	2,6	91	2 820
St Peter's Hospital*	Gen	Church	150			109	2 779
Albion 4 678—Orleans Arnold Gregory Memorial Hosp	Gen	NPA's'n	23	11	76	11	394
Amityville 4 437—Suffolk Brunswick General Hospital	Gen	Corp	100	16	223	69	1 762
Long Island Home	Gen	N & M	206			123	79
Louden Knickerbocker Hall	Gen	N & M	100			130	264
Reed General Hospital	Gen	Indiv	18	3	14	10	278
Amsterdam 34 817—Montgomery Amsterdam City Hospital	Gen	NPA's'n	71	15	202	45	1 430
Montgomery Sanatorium	TB	County	72			82	113
St Mary's Hospital	Gen	Church	100	17	240	71	1 732
Auburn 36 632—Cayuga Auburn City Hospital*	Gen	NPA's'n	133	22	308	84	3 992
Merny Hospital	Gen	Church	80	14	106	32	940
Ballston Spa 4 591—Saratoga Benedict Memorial Hospital	Gen	NPA's'n	16	6	81	12	340
Batavia 17 375—Genesee St Jerome's Hospital	Gen	Church	54	12	192	40	1 472
Veterans Admin Facility	Gen	Vet	290			232	1 697
Woman's Hospital	Gen	NPA's'n	62	10	160	31	1 201
Bath 4 010—Steuben Bath Hospital	Gen	Part	40			94	32 11,0
Pleasant Valley Sanatorium	TB	County	40			30	63
Veterans Admin Facility	Gen	Vet	300			307	1,810
Bay Shore 4 080—Suffolk Southside Hospital	Gen	NPA's'n	78	26	317	37	1 442
Beacon 11 933—Dutchess Craig House	N & M	Corp	77			51	09
Highland Hospital	Gen	Corp	44	10	99	27	684
Matteawan State Hospital	Ment	State	1 320			1 288	137
Bedford Hills 1 000—Westchester Montefiore Hospital Country Sanatorium*	TB	NPA's'n	230			219	233
Binghamton 76 662—Broome Binghamton City Hospital	Gen	City	460	40	800	301	8 493
Binghamton State Hospital*	Gen	State	2 974			3 624	514
Brentwood 534—Suffolk Pilgrim State Hospital	Ment	State	7 722			0 626	794
Ross Sanitarium	Gen	Indiv	00	2	14	18	166
Bronxville 6 387—Westchester Lawrence Hospital	Gen	Corp	89	18	269	59	1 542
Brooklyn 2 560 401—Kings Adelphi Hospital	Gen	Indiv	77	16	257	42	1 001
Bay Ridge Hospital	Gen	Corp	70	20	469	50	1 764
Bedford Maternity	Mat	Corp	20	20	No data supplied		
Bensonhurst Maternity Hosp	Mat	Corp	24	24	427	12	40
Bethany Deaconess Hospital	Gen	Church	80	20	240	41	1 284
Beth El Hospital*	Gen	NPA's'n	190	48	1 415	106	4 867
Beth Moses Hospital*	Gen	NPA's'n	194	20	712	144	4 122
Boro Park General Hospital	Gen	Indiv	82	30	687	00	1 288
Brooklyn Eye and Ear Hosp	N & M	NPA's'n	140			78	900
Brooklyn Home for Consumptives	TB	NPA's'n	113			109	102
Brooklyn Hospital*	Gen	NPA's'n	350	60	1 043	230	7 403
Brooklyn State Hospital*	Ment	State	1 300			1 267	2 008
Brooklyn Women's Hospital	Mat	NPA's'n	50	48	1 026	80	3 329
Bushwick Hospital*	Gen	NPA's'n	105	22	541	80	2 44
Caledonia Hospital*	Gen	NPA's'n	100	30	240	40	1 177
Carson C Peck Memorial Hosp	Gen	NPA's'n	89	31	606	56	1 900
Coney Island Hospital*	Gen	City	270	30	1 133	237	9 267
Crown Heights Hospital	Gen	Corp	115	23	616	117	3 007

Key to symbols and abbreviations is on page 798

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Cumberland Hospital**	Gen	City	284	34	933	291	7 096
Evangelical Deaconess Hospital	Gen	Church	63	20	156	35	1 000
Greenpoint Hospital*	Gen	City	270	50	1 446	197	5 750
Harbor Hospital	Gen	NPA'sn	53	8	69	32	1 136
Hospital of the Holy Family	Gen	Church	63			57	1 803
House of St. Giles the Cripple	Orth	Church	46			32	109
Israel Zion Hospital*	Gen	NPA'sn	350	100	2 708	273	8 494
Jewish Hospital**	Gen	NPA'sn	541	127	1 969	377	12 840
Kings County Hospital**	Gen	City	3 040	120	2 877	2 879	52 318
Kingsston Avenue Hospital*	Gen	City	510			401	5 935
Kingsway Hospital	Gen	Indiv	22	5	157	9	320
Liberty Hospital	Gen	Corp	33	24	523	22	718
Long Island College Hosp**	Gen	NPA'sn	428	47	1 114	349	8 701
Lutheran Hospital	Gen	Church	90	21	489	33	1 159
Madison Park Hospital	Gen	Corp	74	24	925	57	2 063
Methodist Episcopal Hosp**	Gen	Church	320	80	1 723	317	9 740
Midwood Hospital	Gen	Corp	53	27	447	33	1 344
Norwegian Lutheran Deaconess Home and Hosp**	Gen	Church	161	37	846	141	4 419
Prospect Heights Hospital	Gen	NPA'sn	134	41	546	48	1 831
Riverdale Hospital	Gen	Indiv	50	36	338	10	641
St. Catherine's Hospital*	Gen	Church	249	56	1 192	206	5 284
St. Cecilia Hospital for Women	Mat	Church	36	50	423	17	644
St. Charles Hospital Orthopedic Clinic	Orth	Church	50			51	187
St. John's Hospital**	Gen	Church	204	30	723	180	4 839
St. Mary's Hospital*	Gen	Church	237	66	919	173	4 909
St. Peter's Hospital*	Gen	Church	206	14	193	120	2 607
Samaritan Hospital	Gen	Church	33	12	230	23	1 263
Samaritan Hospital Skene Division	Gen	Church	60	10	208	27	1 019
Shore Road Hospital	Gen	Corp	50	18		20	594
Station Hospital	Gen	Army	55			50	1 661
Swedish Hospital	Gen	NPA'sn	64	16	278	106	2 944
Trinity Hospital*	Gen	Navy	110	15	189	180	1 420
U. S. Naval Hospital	Gen	Navy	848			142	4 710
Unity Hospital	Gen	NPA'sn	176	31	688	30	1 309
Victory Memorial Hospital	Gen	NPA'sn	56	13	392	30	1 229
Dr. Wades Private Hospital	Gen	Indiv	50	24	39	23	
Williamsburgh Maternity Hosp	Mat	Corp	70	62		23	
Wyckoff Heights Hospital*	Gen	NPA'sn	170	30	523	161	4 823
Buffalo 573 076—Erie	Gen	CyCo	1 020	38	672	967	10 668
Buffalo City Hospital**	Gen	NPA'sn	120	12	90	88	2 553
Buffalo Columbus Hospital	Gen	NPA'sn	439	28	601	343	10 988
Buffalo General Hospital**	Gen	NPA'sn	220	21	311	150	4 117
Buffalo Hospital of the Sisters of Charity*	Gen	Church	2 697			2 350	630
Buffalo State Hospital**	Ment	State	64	10	206	36	2 339
Central Park Clinic	Gen	Corp	211	39	510	148	4 290
Children's Hospital*	MatCh	NPA'sn	190	30	1 012	187	5 842
Deaconess Hospital*	Gen	NPA'sn	106			92	2 758
Emergency Hospital of the Sisters of Charity*	Gen	Church	62	13	206	39	1 123
Lafayette General Hospital	Gen	NPA'sn	53	10	200	39	1 140
Memorial Hospital	Gen	Church	166	34	862	160	3 972
Mercy Hospital*	Gen	NPA'sn	236	73	1 310	200	5 738
Millard Fillmore Hospital**	Gen	N&M	200			164	344
Providence Retreat	Gen	Church	52	12	981	48	1 101
St. Mary's Infant Asylum and Maternity Hospital	MatCh	Church	50			38	2 291
State Institute for the Study of Malignant Disease	Gen	State	70			28	677
U. S. Marine Hospital	Gen	USPHS	12	4	8	5	210
Callicoon 680—Sullivan	Gen	Indiv	97	10	90	67	970
Callicoon Hospital	Gen	Indiv	70			40	64
Cambridge 1 760—Washington	Gen	NPA'sn	103	17	272	71	1 600
Mary McClellan Hospital*	Gen	NPA'sn	468			488	104
Canandaigua 7 541—Ontario	Gen	City	21	6	46	12	378
Brigham Hall Hospital	N&M	Corp					171
Frederick Ferris Thompson Hospital	Gen	Corp					115
Veterans Admin Facility	Gen	Corp					408
Canastota 4 230—Madison	Ment	Vet					21
Canastota Memorial Hospital	Gen	City					6
Canadaga 400—Chautauqua	Gen	City					180
Newton Memorial Hospital	TB	County					171
Castle Point 23—Dutchess	TB	Vet					479
Veterans Admin Facility	TB	Vet					408
Catkill 5 082—Greene	Gen	County					36
Memorial Hospital of Greene County	Gen	County					8
Central Islip 670—Suffolk	Gen	County					36
Central Islip State Hospital*	Ment	State					7 240
Central Valley 800—Orange	Gen	County					6 710
Falkirk in the Ramapo	Ment	Corp					40
Chenango Bridge 260—Broome	Gen	County					190
Broome County Tuberculosis Hospital	TB	County					190
Clifton Springs 1 510—Ontario	Gen	County					36
Clifton Springs Sanitarium and Clinic*	Gen	NPA'sn					470
Cohoes 23 260—Albany	Gen	NPA'sn					59
Cohoes Hospital*	Gen	NPA'sn					10
Cold Spring 1 784—Putnam	Gen	NPA'sn					23
Julia L. Butterfield Memorial Hospital	Gen	NPA'sn					23
Cooperstown 2 000—Otsego	Gen	NPA'sn					71
Mary Imogene Bennett Hosp	Gen	NPA'sn					8
Cornwall 150—Steuben	Gen	NPA'sn					8
Cornwall Hospital	Gen	NPA'sn					60
Cornwall 1 910—Orange	Gen	NPA'sn					60
Cornwall Ho pital	Gen	NPA'sn					11
Cortland 1 043—Cortland	Gen	NPA'sn					114
Cortland County Hospital*	Gen	NPA'sn					114

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Cuba 1 422—Allegany	Gen	NPA'sn	16	6	31	6	297
Cuba Memorial Hospital	Gen	NPA'sn					
Dannemora 3 348—Clinton	Ment	State	970			878	111
Dannemora State Hospital	Gen	NPA'sn	22	3	72	21	520
Dansville 4 928—Livingston	Gen	NPA'sn					
Dansville General Hospital	Gen	NPA'sn					
Delhi 1,840—Delaware	TB	County	32			28	35
Delaware County Tuberculosis Sanatorium	TB	County	41	10	86	20	536
Dobbs Ferry, 5 741—Westchester	Gen	NPA'sn	50	10	137	23	1 206
Dobbs Ferry Hospital	Gen	NPA'sn					
Dunkirk 17 802—Chautauqua	Gen	NPA'sn					
Brooks Memorial Hospital	Gen	NPA'sn					
Elizabethtown 636—Essex	Gen	NPA'sn	11	4	30	4	163
Elizabeth Community House Hospital	Gen	NPA'sn					
Ellenville 3 280—Ulster	Gen	NPA'sn	14	5	69	9	280
Veterans Memorial Hospital	Gen	NPA'sn					
Elmhurst, 47 397—Chemung	Gen	NPA'sn	183	30	488	135	4 857
Arnold Ogden Memorial Hospital**	Gen	NPA'sn	36			35	44
Chemung County Sanatorium	TB	County	190	27	463	101	4 200
St. Joseph's Hospital*	Gen	Church					
Endicott 16 931—Broome	Gen	City	116	30	619	93	2 802
Ideal Hospital*	Gen	City					
Farmingdale 3 373—Nassau	TB	County	380			364	638
Nassau County Sanatorium	TB	County					
Far Rockaway—Queens	Gen	NPA'sn					
Natalie and Louis Helmsheimer Memorial	Unit of Hospital for Joint Diseases N.Y.C.	Gen	90	22	300	72	2 801
St. Joseph Hospital	Gen	Church					
Fillmore 488—Allegany	Gen	NPA'sn	16	4	69	6	201
Genevieve Country Memorial Hospital	Gen	NPA'sn					
Fishers Island 324—Suffolk	Gen	Army	90			40	760
Station Hospital	Gen	Army					
Flushing—Queens	Gen	NPA'sn	180	78	1 778	198	6 601
Flushing Hospital and Dispensary**	Gen	NPA'sn	40	12	220	30	1 440
Parsons Sanitarium	Gen	Corp	80	4	21	50	918
Station Hospital	Gen	Corp					
Ft. Niagara (Youngstown P.O.)—Niagara	Gen	Army	50	2	10	20	503
Station Hospital	Gen	Army					
Ft. Slocum—Westchester	Gen	Army	100			40	1 402
Station Hospital	Gen	Army					
Ft. Wadsworth (Staten Island P.O.)—Richmond	Gen	Army	26			8	347
Station Hospital	Gen	Army					
Fulton 12 462—Oswego	Gen	City	36	11	214	20	1 100
Albert Lindley Lee Memorial Hospital	Gen	City					
Gabriels 200—Franklin	TB	Church	130			77	66
Sanatorium Gabriels	TB	Church					
Geneva 16 033—Ontario	Gen	NPA'sn	73	20	190	46	1 626
Geneva General Hospital	Gen	NPA'sn					
Glen Cove 11 400—Nassau	Gen	NPA'sn	100	20	338	60	2 112
North Country Community Hospital	Gen	NPA'sn	13	5	45	6	196
Parkside Hospital	Gen	NPA'sn	50	10	271	71	2 241
Glens Falls 18 831—Warren	Gen	NPA'sn	82			58	41
Glens Falls Hospital	Gen	NPA'sn					
Westmont Sanatorium	TB	County					
Gloversville 93 099—Fulton	Gen	NPA'sn	102	18	257	55	2 149
Nathan Littauer Hospital*	Gen	NPA'sn					
Goshen 2 891—Orange	Gen	NPA'sn	39	8		20	
Goshen Hospital	Gen	NPA'sn					
Interpines Sanitarium	N&M	Indiv	60			38	52
Gouverneur 4 015—St. Lawrence	Gen	NPA'sn	18	6	71	11	394
Stephen B. Van Duzee Hospital	Gen	NPA'sn					
Governors Island—New York	Gen	Army	164	9	83	104	3 264
Station Hospital	Gen	Army					
Gowanda 3 042—Cattaraugus	Gen	Part	20	8	113	11	341
Townsend Hospital	Gen	Part					
Granville 3 483—Washington	Gen	NPA'sn	16	0	02	9	201
Emma Laing Stevens Hospital	Gen	NPA'sn					
Greenport 3 062—Suffolk	Gen	NPA'sn	25	8	137	10	673
Eastern Long Island Hospital	Gen	NPA'sn					
Harmon on Hudson 110—Westchester	N&M	Indiv	20			12	
Crichton House	N&M	Indiv					
Harrison 1 485—Westchester	N&M	Church	200			187	60
St. Vincent's Retreat	N&M	Church					
Hastings on Hudson 7 097—Westchester	N&M	NPA'sn	41			38	102
Hastings Hillside Hospital*	N&M	NPA'sn					
Helmsuth—Erie	Gen	County					
Gowanda State Homeopathic Hospital*	Ment	State	1 336			1 413	388
Hempstead 12 600—Nassau	Gen	County	200	18		New	
Meadowbrook Hospital	Gen	County	18	14	216	10	44
Mercy Hospital	Gen	Church				8	286
Station Hospital	Gen	Army					
Herkimer 10 446—Herkimer	Gen	NPA'sn	31	8	79	24	701
Herkimer Memorial Hospital	Gen	NPA'sn					
Holcomb 294—Ontario	TB	County	40			51	60
Oak Mount Sanatorium	TB	County					
Holtville 260—Suffolk	TB	County	120			107	143
Suffolk Sanatorium	TB	County					
Hornell 16 200—Steuben	Gen	Corp	44	10	130	20	1 034
Bethesda Hospital	Gen	Corp	94	16	226	42	1 839
St. James Mercy Hospital	Gen	Corp					
Hudon 12 337—Columbia	Gen	NPA'sn	90	10	230	70	1 144
Hudon on City Hospital*	Gen	NPA'sn					
Huntington 6 200—Suffolk	Gen	NPA'sn					
Huntington Hospital	Gen	Corp	78	12	206	54	1 710
Huron 9 900—Herkimer	Gen	NPA'sn					
Huron Hospital	Gen	NPA'sn					

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NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassnets	Number of Births	Average Patients	Patients Admitted
Irrington 3 067—Westchester Irvington House	Card	NPA's'n	84		83	107	
Ithaca 20 708—Tompkins Tompkins County Memorial Hospital	Gen	NPA's'n	10	20	319	78	2 427
Jamaica—Queens Jamaica Hospital**	Gen	NPA's'n	144	33	925	116	4 330
Mary Immaculate Hospital*	Gen	Church	234	56	1 408	231	7 272
Queens General Hospital	Gen	City	532	52		New	
Queensboro Hospital for Communicable Diseases	Is	City	46		53	1 022	
Van Wyck Hospital	Gen	Indiv	34	6	6	15	630
Jamestown 45 15—Chautauqua Jamestown General Hospital	Gen	City	100	15	352	57	3 203
Woman's Christian Association Hospital*	Gen	NPA's'n	104	32	352	52	2 930
Johnson City 13 567—Broome Charles S. Wilson Memorial Hospital**	Gen	NPA's'n	320	30	439	180	4 559
Katonah 1 400—Westchester Four Winds	N&M	Indiv	3		20	49	
Hillbourne Farms	Nerv	NPA's'n	10		7	13	
Kings Park 1 067—Suffolk Kings Park State Hospital	Ment	State	5 186		4 481	1 264	
Kingston 28 038—Ulster Benedictine Hospital*	Gen	Church	84	16	177	68	2 251
Kingston Hospital*	Gen	NPA's'n	118	15	377	60	2 742
Dr. C. O. Sahler Sanatorium	Conv	Corp	100		39	74	
Ulster County Tuberculosis Hospital	TB	County	56		51	84	
Lackawanna 23 948—Erie Moses Taylor Hospital	Indus	NPA's'n	28		11	2 9	
Our Lady of Victory Hosp**	Gen	Church	142	16	2 36	93	1 909
Lake Kashaqua 10—Franklin Stony Wood Sanatorium	TB	NPA's'n	145		129	105	
Lake Placid 2 930—Essex Lake Placid General Hospital	Gen	City	23	6	56	10	363
Liberty 3 427—Sullivan Maimonides Hospital	Gen	NPA's'n	30	5	62	10	475
Workmen's Circle Sanatorium	FB	Frat	100		49	108	
Little Falls 11 10—Herkimer Little Falls Hospital	Gen	Corp	36	11	142	20	968
Livingston 249—Columbia Potts Memorial Hospital	TB	NPA's'n	50		47	34	
Lockport 23 160—Niagara Lockport City Hospital	Gen	City	72	11	327	51	1 713
Niagara County Sanatorium	TB	County	200		207	121	
Long Beach 5 817—Nassau Long Beach Hospital	Gen	NPA's'n	31	5	68	17	690
Long Island City—Queens Boulevard Sanatorium	Gen	Corp	73	28	714	49	2 094
Daly's Astoria Sanatorium	Gen	Corp	3	24	57	1	601
River Crest Sanatorium	N&M	Corp	132		102	241	
St. John's Long Island City Hospital*	Gen	Church	256	44	914	220	5 988
Loomis 200—Sullivan Loomis Sanatorium*	TB	NPA's'n	130		93	157	
Lowville 3 421—Lewis Lewis County General Hosp	Gen	StateCo	40	8	119	22	954
Lyons 3 905—Wayne Edward J. Barber Hospital	Gen	Indiv	22		32	17	386
Lyons Hospital	Gen	Corp	20	4	47	10	362
Malone 8 637—Franklin Alice Hyde Memorial Hospital	Gen	NPA's'n	74	12	179	49	1 166
Marcy 112—Oneida Marcy State Hospital	Ment	State	270		2 626	514	
Medina 6 071—Orleans Medina Memorial Hospital	Gen	NPA's'n	29	7	59	12	571
Middle Grove 280—Saratoga Saratoga County Tuberculosis Hospital	TB	County	90		87	181	
Middletown 21 276—Orange Elizabeth A. Horton Memorial Hospital	Gen	NPA's'n	90	18	197	51	1 721
Middletown Sanatorium and Hospital	Gen	Indiv	40	8		24	
Middletown State Homeopathic Hospital*	Ment	State	2 780		3 022	370	
Mineola 8 105—Nassau Nassau Hospital*	Gen	NPA's'n	170	30	766	141	4 900
Monticello 3 400—Sullivan Hamilton Avenue Hospital	Gen	Indiv	12	4	51	8	317
Monticello Hospital	Gen	NPA's'n	24	5	42	9	464
Mt. Kisco 5 127—Westchester Northern Westchester Hospital	Gen	NPA's'n	100	18	377	60	2 347
Mt. McGregor—Saratoga Metropolitan Life Insurance Company Sanatorium*	Gen	NPA's'n	360		221	359	
Mt. Vernon 61 490—Westchester Mt. Vernon Hospital*	Gen	NPA's'n	100	30	62	119	3 709
Mt. Vernon 2 800—Otsego Otsego County Sanatorium	TB	County	26		17	26	
Newburgh 31 270—Orange Estelle and Walter C. Odell Memorial Hospital for Tuberculosis	TB	County	50		47	67	
St. Luke's Sanatorium	Gen	NPA's'n	192	19	272	73	2 710
New Rochelle 54 000—Westchester New Rochelle Hospital*	Gen	NPA's'n	121	26	528	127	3 937
New York City 4 211 670—New York Babies Hospital*	Chil	NPA's'n	104		95	2 857	
Reekman Street Hospital	Gen	NPA's'n	100		63	2 300	
Bellevue Hospital**	Gen	City	2 111	110	1 854	2 372	9 040
Beth David Hospital*	Gen	NPA's'n	132	24	254	70	2 969

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassnets	Number of Births	Average Patients	Patients Admitted
Beth Israel Hospital**	Gen	NPA's'n	360	84	1 774	266	7 989
Broad Street Hospital	Gen	NPA's'n	117	8	55	53	2 274
Bronx Eye and Ear Infirmary	ENT	NPA's'n	30		13	1 769	
Bronx Hospital*	Gen	NPA's'n	300	59	1 794	231	7 900
Bronx Maternity and Woman's Hospital	Mat	NPA's'n	34	34	578	15	644
Central Neurological Hosp + Charles B. Towns Hospital	Neur	City	470		458	773	
Columbus Hospital*	Gen	Church	260	40	406	139	4 614
Columbus Hospital Extension	Gen	Church	85	15	223	68	1 831
Community Hospital	Gen	NPA's'n	90	18	152	40	2 149
Concourse Hospital	Gen	Indiv	44	30	340	20	1 397
Crotona Park Sanatorium	Gen	Corp	27	24	292	15	561
Doctors Hospital	Gen	NPA's'n	215	50	582	89	2 581
Fifth Avenue Hospital**	Gen	Corp	260	40	580	172	5 694
Fitch Sanatorium	Gen	Corp	77	46	550	29	1 194
Flower Hospital	See New York Homeopathic Medical Col						
Legge and Flower Hospital	Gen	City	568	51	1 799	498	13 742
Fordham Hospital*	Mat	Indiv	10	10	140	5	150
Franklin Maternity Sanatorium	Gen	NPA's'n	200	50	82	142	3 700
French Hospital*	ENT	Indiv	24		No data supplied		
Gelber Hospital	Gen	City	209	20	369	160	4 801
Gouverneur Hospital*	ENT	NPA's'n	50		7	1 000	
Harlem Eye and Ear Hosp + Harlem Hospital**	Gen	City	677	52	1 320	431	11 403
Herman Knapp Memorial Eye Hospital*	Eye	Corp	50		32	818	
Hospital for Joint Diseases**	G&O	NPA's'n	300		302	5 409	
Hunts Point Hospital	Gen	Corp	90	20		87	
Jewish Maternity Hospital	Unit of Beth Israel Hospital						
Jewish Memorial Hospital	Gen	NPA's'n	100	12	104	70	1 800
Kniekerbocker Hospital*	Gen	NPA's'n	174	30	622	116	3 206
Lebanon Hospital*	Gen	NPA's'n	139	10	302	100	3 000
Le Roy's Maternity Hospital	Mat	Indiv	50	50	589	14	690
Lenox Hill Hospital**	Gen	NPA's'n	516	74	830	381	10 120
Le Roy Sanatorium	Gen	Corp	4		No data supplied		
Lincoln Hospital**	Gen	City	230	32	1 297	323	6 000
Lutheran Hospital	Gen	NPA's'n	100	21	576	70	2 429
Lying in Hospital*	Unit of New York Hospital						
Manhattan Eye Ear and Throat Hospital*	FNT	NPA's'n	312		143	16 002	
Manhattan General Hospital*	Gen	Corp	176	12	180	78	2 900
Manhattan Maternity and Disp	Unit of New York Hospital						
Manhattan State Hospital*	Ment	State	4 138		3 390	2 687	
Memorial Hospital for the Treatment of Cancer and Allied Diseases*	Ca	NPA's'n	110		160	2 460	
Metropolitan Hospital**	Gen	City	1 367	78	1 987	1 513	10 778
Midtown Hospital	Gen	NPA's'n	60	10	60	34	2 420
Misericordia Hospital**	Gen	Church	247	70	1 313	231	3 007
Montefiore Hospital for Chronic Diseases**	Gen	NPA's'n	711		683	1 968	
Morrisania City Hospital**	Gen	City	471	68	1 848	521	14 541
Mount Morris Park Hospital	Gen	Indiv	40	30	136	12	590
Mt. Sinai Hospital**	Gen	NPA's'n	790		530	13 584	
Nazareth Hospital for Women and Children	Unit of Seton Hospital						
Neurological Institute of New York*	Neur	NPA's'n	222		163	3 478	
New York City Cancer Institute Hospital*	Ca	City	192		188	809	
New York City Hospital*	Gen	City	1 020	28	681	990	8 207
New York Eye and Ear Infirmary*	ENT	NPA's'n	168		100	5 644	
New York Foundling Hosp**	MatCh	Church	326	48	50	2 000	2 711
New York Homeopathic Medical College and Flower Hospital*	Gen	NPA's'n	204	34	614	104	5 070
New York Hospital**	Gen	NPA's'n	879	131	2 731	574	14 700
New York Infirmary for Women and Children*	Gen	NPA's'n	120	37	849	91	2 477
New York Nursery and Childs Hospital	Unit of New York Hospital						
New York Ophthalmic Hospital	Unit of New York Homeopathic Medical						
New York College and Flower Hospital	Orth	NPA's'n	132		90	1 378	
New York Orthopaedic Dispensary and Hospital*	Gen	NPA's'n	99	37	800	188	6 801
New York Polyclinic Medical School and Hospital**	Gen	NPA's'n	411		200	9 192	
New York Post Graduate Medical School and Hospital**	Orth	NPA's'n	268		168	2 993	
New York Society for the Relief of the Ruptured and Crippled*	Ment	State	200		173	2 000	
New York State Psychiatric Institute and Hospital*	Gen	Corp	120	24	366	64	2 494
Park East Hospital	Gen	Corp	70	8	80	27	1 160
Park Hill Sanatorium	Gen	Corp	66	12	168	18	784
Parkway Latin Hospital	Gen	Corp	64	10	180	30	2 909
Park West Hospital	Gen	Corp	64	10	180	30	2 909
Payne Whitney Psychiatric Clinic	Unit of New York Hospital						
People's Hospital	Gen	NPA's'n	30	5	40	30	1 910
Presbyterian Hospital**	Gen	NPA's'n	648		402	10 561	
Psychiatric Pavillon of Bellevue Hospital	Unit of Bellevue Hospital						
Reconstruction Hospital	Unit of New York Post Graduate Medi						
Reconstruction Hospital	TbIs	City	332		377	1 431	
Riverside Hospital	Gen	NPA's'n	379		276	6 162	
Roosevelt Hospital*	Gen	Indiv	110	20	1 096	62	2 600
Royal Hospital	Unit of New York Foundling Hospital						
St. Ann's Maternity Hospital	Unit of New York Foundling Hospital						

Key to symbols and abbreviations is on page 798

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
St. Clare's Hospital	Gen	Church	75	1	22	9	1,771
St. Elizabeth's Hospital	Gen	Church	109	27	5	46	1,425
St. Francis Hospital*	Gen	Church	425	74	181	151	1,425
St. John's Hospital	Unit of New York Foundling Hospital						
St. Joseph's Hospital for Consumptives	TB	Church	350	52	1	440	
St. Luke's Hospital**	Gen	Church	532	8	94	80	9,648
St. Vincent's Hospital**	Gen	Church	430	24	23	22	
Seton Hospital	TB	Church	244	168	249	217	9,040
Sloane Hospital for Women**	GynOb	NPA's'n	176	24	97	14	4,889
Sydenham Hospital*	Gen	NPA's'n	176	24	97	14	4,889
Union Hospital	Gen	NPA's'n	176	24	97	14	4,889
U.S. Marine Hospital**	Gen	USPHS	132	70	1	29	1,066
University Heights Hospital	Gen	Corp	0	17	12	33	4,471
Veterans Admin. Facility	Gen	Vet	94	0	0	81	4,471
Westchester Square Hospital	Gen	Indiv	72	32	490	0	1,191
West Hill Sanatorium	N&M	Indiv				1	491
West Side Ho.ital and Dispensary	Gen	NPA's'n	24	9	4	14	66
Wickham Hospital	Gen	Corp	44	9	4	2	600
Willard Parker Hospital**	Indiv	City	474	1	2	112	7,294
William Booth Memorial Hosp.	Gen	Church	48	2	24	2	90
Woman's Hospital*	GynOb	NPA's'n	219	84	112	194	4,816
Niagara Falls 7460—Niagara	Gen	Church	17	2	415	71	2,400
St. Mary's Hospital*	Gen	NPA's'n	16	2	30	90	649
Niagara Falls Memorial Hosp.	Gen	NPA's'n	16	2	30	90	649
Northport 2378—Suffolk	Ment	Vet	1	9		1	412
Veterans Admin. Facility							20
North Tonawanda 19019—Niagara	Gen	City	48	16	20	2	1,173
De Graff Memorial Hospital	Gen	City	48	16	20	2	1,173
Norwich 8378—Chenango	Gen	NPA's'n	68	1	10	4	944
Chenango Memorial Hospital	Gen	NPA's'n	68	1	10	4	944
Nyack 392—Rockland	Gen	NPA's'n	85	10	27	7	2,000
Nyack Hospital	Gen	NPA's'n	85	10	27	7	2,000
Ogdensburg 1691—St. Lawrence	Gen	Church	160	20	1	104	3,000
A. Barton Hepburn Hospital*	TB	Church	4	1	1	3	0
St. John's Hospital	TB	Church	4	1	1	3	0
St. Lawrence State Hospital**	Ment	State	22	1	2	168	1
Olean 2170—Cattaraugus	Gen	Indiv	6	9	1	16	68
Mountain Clinic	Gen	NPA's'n	81	27	248	40	1,800
Olean General Hospital	Gen	NPA's'n	81	27	248	40	1,800
Rocky Crest Sanatorium	TB	County	40	2	1	5	76
Oneida 10548—Madison	Gen	NPA's'n	17	10	80	842	
Broad Street Hospital*	Gen	City	17	4	10	12	408
Oneida City Hospital	Gen	City	17	4	10	12	408
Oneonta 1236—Otsego	Gen	NPA's'n	4	6	14	75	1,811
Aurelia Osborn Fox Memorial Hospital	Gen	NPA's'n	4	6	14	75	1,811
Orangeburg 60—Rockland	Ment	State	4	00		4	01
Rockland State Hospital*	Ment	State	4	00		4	01
Ossining 10341—Westchester	Gen	NPA's'n	60	11	214	6	1,700
Ossining Hospital	Gen	NPA's'n	60	11	214	6	1,700
Stony Lodge	N&M	Indiv	1	1	1	18	1
Oswego 2962—Oswego	Gen	NPA's'n	49	11	219	30	1,608
Oswego Hospital	Gen	NPA's'n	49	11	219	30	1,608
Station Hospital	Gen	Army	0	0	0	22	461
Otseville 809—Orange	TB	City	88	3	3	3	67
Municipal Sanatorium*	TB	City	88	3	3	3	67
Owego 4742—Tioga	N&M	Corp	0	0	0	9	12
Glenmarc Sanatorium	N&M	Corp	0	0	0	9	12
Peekskill 1712—Westchester	Gen	NPA's'n	70	12	296	77	1,111
Peekskill Hospital	Gen	NPA's'n	70	12	296	77	1,111
Penn Yan 337— Yates	Gen	NPA's'n	41	10	140	30	1,181
Soldiers and Sailors Memorial Ho.ital	Gen	NPA's'n	41	10	140	30	1,181
Perryburg 217—Cattaraugus	TB	City	300	0	0	70	420
St. Adam Memorial Hospital	TB	City	300	0	0	70	420
Elmhurst 156—Columbia	TB	County	6	0	0	57	70
Columbia County Tuberculosis Sanatorium	TB	County	6	0	0	57	70
Ellettsburg 1340—Clinton	Gen	Church	100	10	62	62	2,24
Champlain Valley Hospital*	Gen	NPA's'n	40	15	191	47	1,08
Phyllis Ho.ital	Gen	Army	64	2	3	42	1,17
Station Hospital	Gen	Army	64	2	3	42	1,17
Tomona 15—Rockland	TB	County	2	0	0	0	44
Summit Park Sanatorium	TB	County	2	0	0	0	44
Pt. Chester 22662—Westchester	Gen	Church	1	0	0	0	420
St. Luke's Convalescent Hosp.	Gen	NPA's'n	164	6	1	181	3
United Ho.ital**	Gen	NPA's'n	164	6	1	181	3
Pt. Jefferson 2200—Suffolk	Gen	NPA's'n	8	12	11	0	1,02
John T. Mather Memorial Ho.ital	Gen	NPA's'n	8	12	11	0	1,02
St. Charles Ho.ital for Crippled Children	Orth	Church	2	0	0	230	41
Pt. Jervis 10343—Orange	Gen	Church	4	10	40	70	314
St. Francis Hospital	Gen	Church	4	10	40	70	314
Yonkers 4126—St. Lawrence	Gen	NPA's'n	4	21	140	2	1,174
Poughkeepsie 4028—Dutchess	Ment	State	44	1	1	4,400	6,2
Hudon River State Hosp**	Gen	Church	87	15	1	60	2,134
St. Francis Ho.ital*	TB	Corp	0	0	0	3	4
Samuel and Nellie Bowne Ho.ital	TB	CoCo	1	0	0	12	112
Ho.ital	Gen	NPA's'n	12	3	3	13	4,2
Yonkers Brothers Ho.ital**	Gen	NPA's'n	12	3	3	13	4,2
Queens Village—Queens	Ment	State	4,000	0	0	1	14
Creedmoor State Ho.ital	Ment	State	4,000	0	0	1	14
Ray Brook 40—Yonkers	TB	State	300	0	0	202	40
New York State Ho.ital	TB	State	300	0	0	202	40
Rhinebeck 16—Dutchess	Gen	NPA's'n	50	8	7	24	140
Northern Dutchess Health Service Center	Gen	NPA's'n	50	8	7	24	140
Picard 404—Oswego	TB	County	111	0	0	68	104
Oswego County Sanatorium	TB	County	111	0	0	68	104

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Rochester 325132—Monroe	Gen	Indiv	16	12	91	4	183
Belvidere Private Hospital	Gen	NPA's'n	187	31	494	128	3,881
Geneva Hospital**	Gen	NPA's'n	170	30	348	124	4,272
Highland Hospital**	Gen	NPA's'n	170	30	348	124	4,272
Iola Monroe County Tuberculosis Sanatorium*	TB	County	400	16	199	389	527
Monroe County Hospital	Gen	County	366	16	199	411	2,850
Park Avenue Hospital*	Gen	NPA's'n	83	20	263	40	1,738
Rochester General Hospital**	Gen	NPA's'n	300	61	178	248	6,000
Rochester Municipal Hospital**	Gen	City	309	24	706	240	6,997
Rochester State Hospital*	Ment	State	314	0	0	2,608	3,01
St. Mary's Hospital*	Gen	Church	193	26	440	125	4,073
Strong Memorial Hospital**	Gen	NPA's'n	264	36	231	142	3,681
Rockaway Beach—Queens	Gen	NPA's'n	264	36	231	142	3,681
Venon Beach Hospital for Children	TB	City	170	0	0	120	30
Rockaway Beach Ho.ital and Dispensary	Gen	NPA's'n	100	12	3.2	90	2,572
Rockville Center 10718—Nassau	Gen	NPA's'n	60	18	642	30	2,306
South Nassau Communities Hospital	Gen	NPA's'n	60	18	642	30	2,306
Rome 222—Oneida	Gen	County	190	0	8	194	1,004
Oneida County Hospital	Gen	County	190	0	8	194	1,004
Rome Hospital and Murphy Memorial Hospital	Gen	City	60	17	349	3	2,077
Rome Infirmary	Gen	Indiv	0	0	13	13	176
Sackett Harbor 742—Jefferson	Gen	Army	0	0	0	20	39
Station Hospital	Gen	Army	0	0	0	20	39
Salamanca 957—Cattaraugus	Gen	City	71	14	112	24	991
City Hospital	Gen	City	71	14	112	24	991
Salisbury Center 331—Herkimer	TB	County	90	0	0	90	36
Pine Crest Sanatorium	TB	County	90	0	0	90	36
Saratoga Lake 8020—Franklin	Gen	NPA's'n	76	10	87	20	931
General Hospital	Gen	NPA's'n	76	10	87	20	931
National Variety Artists Lodge (Will Rogers Memorial Hospital)	TB	NPA's'n	70	0	0	4	32
Northwoods Sanatorium	TB	NPA's'n	26	0	0	26	22
Reception Hospital	TB	Indiv	20	0	0	17	12
St. Mary's of the Lake Hosp.	TB	Church	70	0	0	17	16
Saratoga Springs 13169—Saratoga	Gen	NPA's'n	90	17	146	43	1,493
Saratoga Hospital*	Gen	NPA's'n	90	17	146	43	1,493
Schenectady 9692—Schenectady	Orth	NPA's'n	1	40	7.0	219	6,001
Eastern New York Orthopedic Hospital School	Gen	NPA's'n	1	40	7.0	219	6,001
Hills Hospital*	TB	County	112	0	0	10	99
Glenridge Sanatorium	TB	County	112	0	0	10	99
Seneca Falls 6443—Seneca	Gen	City	25	7	68	17	98
Seneca Falls Hospital	Gen	City	25	7	68	17	98
Sherburne 1077—Chenango	TB	County	29	0	0	29	29
Chenango County Tuberculosis Hospital	TB	County	29	0	0	29	29
Sodus 1444—Wayne	Gen	Indiv	7	7	47	12	900
Myers Hospital	Gen	Indiv	7	7	47	12	900
Somers—Westchester	N&M	Indiv	4	0	0	27	91
Pinebrook Sanitarium	N&M	Indiv	4	0	0	27	91
Sonyea—Franklin	Epil	State	2,480	0	0	2	77
Craig Colony*	Epil	State	2,480	0	0	2	77
Southampton 777—Suffolk	Gen	NPA's'n	84	30	229	44	1,773
Southampton Hospital*	Gen	NPA's'n	84	30	229	44	1,773
Stapleton (Staten Island P.O.)—Richmond	Gen	USPHS	312	0	0	291	3,408
St. Mary's Hospital*	Gen	USPHS	312	0	0	291	3,408
Staten Island 10846—Richmond	Gen	NPA's'n	60	18	189	32	1,441
Richmond Memorial Hospital	Gen	NPA's'n	60	18	189	32	1,441
St. Vincent's Hospital*	Gen	Church	217	33	689	167	2,884
St. Vincent's Hospital*	TB	City	148	8	14	1,637	3,480
Staten Island Hospital**	Gen	NPA's'n	234	32	999	192	4,337
Suffern 77—Rockland	Gen	Church	34	10	156	29	1,385
Good Samaritan Hospital	Gen	Church	34	10	156	29	1,385
Summit—Franklin	TB	Vet	320	0	0	366	4,68
Veterans Admin. Facility	TB	Vet	320	0	0	366	4,68
Syracuse 20976—Onondaga	Gen	City	84	0	0	27	670
City Hospital*	Gen	NPA's'n	170	30	571	144	1,14
Croux Irving Hospital*	Gen	NPA's'n	8	2	341	71	2,000
Ho.ital of the Good Shepherd*	Gen	NPA's'n	242	2	68	164	4,873
Onondaga General Hospital	Gen	NPA's'n	242	2	68	164	4,873
Onondaga Sanatorium	TB	County	23	0	0	236	22
Peoples Hospital	Gen	NPA's'n	23	0	0	236	22
St. Joseph Hospital**	Gen	Church	300	71	470	132	3,633
St. Mary's Maternity Ho.ital and Infants Asylum	MatCh	Church	72	29	947	34	361
Syracuse Memorial Hospital*	Gen	NPA's'n	210	40	1,072	211	2,14
Syracuse Psychopathic Hosp.	Ment	State	10	0	0	47	601
Twin Firms	N&M	Indiv	10	0	0	10	4
Tarrytown 641—Westchester	Gen	NPA's'n	60	1	2.2	42	1,08
Tarrytown Ho.ital	Gen	NPA's'n	60	1	2.2	42	1,08
Tianderoga 200—Yonkers	Gen	NPA's'n	44	6	32	25	800
Mose Ludington Hospital	Gen	NPA's'n	44	6	32	25	800
Troy 7276—Rensselaer	Gen	NPA's'n	77	19	200	48	1,734
Leonard Ho.ital	Gen	NPA's'n	77	19	200	48	1,734
Marshall Sanitarium	N&M	NPA's'n	60	0	0	37	278
St. Joseph's Maternity Hosp.	Mat	Church	0	25	712	13	346
Sanitarium Hospital**	Gen	NPA's'n	160	16	300	96	2,92
Troy Ho.ital*	Gen	Church	212	22	238	148	3,000
Trudeau 200—Troy	TB	NPA's'n	180	0	0	180	26
Trudeau Sanatorium*	TB	NPA's'n	180	0	0	180	26
Trumansburg 1077—Tompkins	TB	NPA's'n	30	0	0	24	2
Tompkins County Tuberculosis Ho.ital	TB	NPA's'n	30	0	0	24	2
Tupper Lake 5271—Franklin	Gen	Church	2	2	76	17	474
Mercy General Hospital	Gen	Church	2	2	76	17	474
Tuxedo Park 2000—Orange	Gen	NPA's'n	7	42	18	4	4
Tuxedo Memorial Ho.ital	Gen	NPA's'n	7	42	18	4	4

Key to symbols and abbreviations is

NEW YORK—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Utica 101740—Onelda Pavilion Hospital ^o	Gen	NPA'ssn	116	16	288	74	2,674
Maconic Soldiers and Sailors Memorial Hospital	Gen	Frat	200			129	532
Onelda County Tuberculosis Sanatorium	TB	County	132			128	129
St Elizabeth Hospital ^o	Gen	Church	130	20	351	90	2,612
St Luke's Home and Hosp ^o	Gen	Church	123	28	336	63	2,397
Utica General Hospital	Gen	City	135	8	300	87	3,661
Utica Memorial Hospital ^o	Gen	NPA'ssn	63	12	147	36	1,450
Utica State Hospital ^o	Ment	State	1,640			1,623	427
Valhalla 620—Westchester Grasslands Hospital ^o	Gen	County	888	15	330	667	6,429
Warsaw 3477—Wyoming Wyoming County Community Hospital	Gen	County	80	11	205	51	1,687
Warwick 2433—Orange Warwick Hospital and Clinic	Gen	Indiv	20	4	23	8	235
Waterloo 4047—Seneca Waterloo Memorial Hospital	Gen	NPA'ssn	13	4	38	9	262
Watertown 32205—Jefferson House of the Good Samaritans	Gen	NPA'ssn	122	13	176	80	2,087
Jefferson County Sanatorium	Gen	Church	78			78	72
Mercy Hospital ^o	Gen	Church	100	14	210	63	1,852
Waverly 5662—Tlaga Tlaga County General Hosp	Gen	County	56	12	102	40	982
Wayland 1814—Steuben Wayland Hospital	Gen	Part	16	3	29	10	316
Wellsville 5674—Allegany Memorial Hospital of Wm F and Gertrude F Jones	Gen	City	45	10	154	27	896
West Haverstraw 2834—Rockland New York State Reconstruction Home ⁺	Orth	State	305			277	319
West Point 1250—Orange Station Hospital	Gen	Army	158	8	51	75	2,170
White Plains 35830—Westchester Bloomingdale Hospital ^o	N&M	NPA'ssn	300			232	250
New York Orthopaedic Dispensary and Hospital	Orth	NPA'ssn	169			166	518
St Agnes Hospital ⁺	Gen	Church	105	24	528	71	2,171
White Plains Hospital ^o	Gen	NPA'ssn	120	22	242	60	2,132
Willard 200—Seneca Willard State Hospital ^o	Ment	State	2,730			2,671	429
Wingdale 156—Dutchess Harlem Valley State Hospital ^o	Ment	State	4,430			3,562	1,886
Woodhaven—Queens St Anthony's Hospital	TB	Church	400			382	958
Wyandkill 167—Rensselaer Pawling Sanatorium	TB	County	152			136	150
Yonkers 134646—Westchester Gray Oaks Hospital	TB	City	55			57	80
House of Rest at Sprain Ridge	TB	NPA'ssn	100			133	4,177
St John's Riverside Hospital ^o	Gen	NPA'ssn	176	24	372	93	2,407
St Joseph's Hospital ⁺	Gen	Church	177	20	293	93	2,550
Yonkers General Hospital ^o	Gen	NPA'ssn	136	39	340	72	2,550

Related Institutions

Albany 127412—Albany Albany's Hospital for Incurables	Inc	NPA'ssn	85			85	50
Evergreens Sanatorium School	MeDe	Indiv	10			5	7
St Margaret's Home and Hosp	Inst	Church	43	12		37	45
Albion 4858—Orleans Albion State Training School	MeDe	State	225	19	6	213	40
Orleans Welfare Hospital and Home	Gen	County	40	2	22	35	90
Alden—Erie Erie County Penitentiary Hosp	Inst	County	18				151
Amityville 4437—Suffolk Brunswick Home Sanatorium	MeDe	Corp	355			234	437
Auburn 36652—Cayuga Auburn State Prison Hospital	Inst	State	50			7	193
Whittem Nursing Home	Conv	Indiv	10	3	10	7	88
Bainbridge 1324—Chenango Bainbridge Hospital	Gen	Indiv	10	6	35	11	260
Bay Shore 4080—Suffolk Dr King's Hospital	Gen	Indiv	30	8	59	13	499
Bedford Hills 1000—Westchester Westfield State Farm	In t	State	47	30		24	414
Binghamton 7662—Broome Binghamton Training School for Nervous Backward and Mental Defectives	MeDe	Indiv	50			35	42
Breesport 498—Chemung Chemung County Home	Inst	County	60			30	113
Brewster 1664—Putnam Mountainbrook Farm Sanit	Conv	Indiv	25			19	48
Brooklyn 2560401—Kings Brooklyn Hebrew Home and Hospital for Aged	Inst	NPA'ssn	463			455	123
Churchill Sanatorium	Gen	Indiv	12	3	19	4	78
Faith Home for Incurables	Inc	NPA'ssn	62			52	12
Hamilton Private Hospital	Gen	Indiv	22	3	5	14	489
Jewish Sanatorium for Incurables	Inc	NPA'ssn	525			381	946
Buffalo 573076—Frie Buffalo Eye and Ear Infirmary and Wettlaufer Clinic	F&T	NPA'ssn	8	2		3	484
Inglewood Home	Mat	NPA'ssn	46	30	59	24	99
Parkside Sanatorium and Hosp	Conv	Indiv	40			19	82
Salvation Army Maternity Hospital and Home	Mat	Church	28	6	4	24	73
Caleum 111—Jefferson Jefferson County Contagious Hospital	Iso	County	18			20	88

NEW YORK—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Camden 1912—Onelda Healthforfe-Dr Bell's Private Rest Home	N&M	Indiv	15				Nodata supplied
Canandaigua 7541—Ontario Canandaigua Health Home	Conv	Indiv	18			10	45
Castle 900—Wyoming Greene Sanitarium	Conv	Indiv	35			25	50
Corona—Queens Dr Combes Sanitarium	N&M	Corp	66			37	
Cortland 15043—Cortland Cortland Sanitarium	Conv	Part	12			7	159
Dannemora 3348—Clinton Clinton Prison General and Tuberculosis Hospital	Inst	State	255			165	870
Delhi 1840—Delaware Delaware Hospital	Gen	County	15			10	244
Delhi Hospital	Gen	NPA'ssn	14	6	35	6	255
Eastview 161—Westchester Solomon and Betty Loeb Memorial Home for Convalescents	Conv	NPA'ssn	112			112	1,537
Edmeston 749—Otsego Otsego School for Backward Children	MeDe	Indiv	25			23	10
Elmira 47397—Chemung Chemung County Preventorium	TB	County	32			21	35
Elmira Reformatory	Inst	State	100			22	720
Gleason Health Resort	Conv	Indiv	35			15	16
Far Rockaway—Queens Brooklyn Jewish Home for Convalescents	Conv	NPA'ssn	43			43	954
Wave Crest Convalescent Home and Seaside Hospital	Conv	NPA'ssn	70			57	58
Flushing—Queens New York City Children's Hosp	MeDe	City	450			24	45
Genoa 457—Cayuga Genoa Hospital	Gen	Indiv	10	2	15	3	110
Herkimer 10466—Herkimer Herkimer County Hospital	Gen	County	18			15	129
Hudson 12337—Columbia New York State Training School for Girls	Inst	State	56	4	11	5	495
Industry—Monroe Industry General Hospital	Inst	State	42			25	770
Iroquois 40—Erie Thomas Indian School Hosp	Inst	State	36			11	451
Ithaca 20708—Tompkins Bailey Jones Hospital	Gen	Indiv	14			6	9 299
Conklin Sanitarium	Gen	Indiv	10			4	214
Reconstruction Home	Orth	NPA'ssn	70			45	66
Keene Valley 400—Essex Keene Valley Neighborhood House and Hospital	Gen	NPA'ssn	10	4	19	5	90
Lake Ronkonkoma 49—Suffolk Gary de Vabre Academy	MeDe	Part	18			7	
Margaretville 771—Delaware Margaretville Hospital	Gen	NPA'ssn	10	5	38	4	215
Millgrove 110—Erie Erie County Home and Infirmary	Inst	County	1,382			1,263	455
Montour Falls 1489—Schuyler Shepard Relief Hospital	Gen	NPA'ssn	20	6	47	9	303
Napanoch 633—Ulster Institution for Male Defective Delinquents	MeDe	State	24			17	400
Newark 7649—Wayne Newark State School	MeDe	State	1852	8	13	1599	263
New York City 4211699—New York Beth Abraham Home for Incurables	Inc	NPA'ssn	250			244	71
Bryant Sanitarium	Mat	Indiv	10	10	90	3	90
Colored Orphan Asylum	Inst	NPA'ssn	18			10	248
Correction Hospital	Inst	City	150				
Harts Island Prison Hospital	Inst	City	65			60	767
Hebrew Convalescent Home	Conv	NPA'ssn	85			75	740
Home for Aged and Infirm Hebrews	Inst	NPA'ssn	29			29	406
Home for Hebrew Infants	Inst	NPA'ssn	61			42	1,279
Home for Incurables	Inc	Church	349			312	246
House of Calvary	Ca	Church	140			127	425
House of the Holy Comforter	Inc	Church	100			72	13
Jewish Home for Convalescents	Conv	NPA'ssn	115			60	1,565
Mt Eden Hospital	Gen	Indiv	40	30	505	28	1,552
New York County Penitentiary Hospital	Inst	City	43				Nodata supplied
Dr Rogers Hospital	N&M	Indiv	25			16	400
St Andrew's Convalescent Hosp	Conv	Church	30			15	302
St Rose's Free Home for Incurable Cancer	Ca	Church	89			78	365
Sherman Square Hospital	Gen	Corp	43			10	Nodata supplied
Tonsil Hospital	N&T	NPA'ssn	36				Nodata supplied
Dr Wiley M Wiltons Private Hospital (col)	Gen	Indiv	8	2	20	3	125
Niagara Falls 75460—Niagara Niagara Falls Municipal Hosp	Iso	City	36			10	100
Onondaga 12536—Otsego Parball Private Hospital	Gen	Indiv	34			6	Nodata supplied
Onondaga 260—Onondaga Onondaga County Hospital	Gen&Inst	County	155	13	123	131	534
Oriskany 1142—Onelda Eastern Star Home and Infirmary	Inst	Frat	60			48	26
Ossining 15241—Westchester Greenmont on Hudson	N&M	Indiv	19			10	
Sing Sing Prison Hospital	Inst	State	86			47	1,624

Key to symbols and abbreviations is on page 798

NEW YORK—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Bas Inets	Number of Births	Average Patients	Patients Admitted
Ottville 609—Orange	TB	Indiv	10			9	30
Dr Shevells Convalescent Home							
Oxford 1601—Chenango							
New York State Women's Relief Corps Home	Inst	State	50			47	48
Patchogue 6,860—Suffolk	Gen	Indiv	24	6		5	
Community Hospital							
Pawling 1704—Dutchess	N&M	Corp	19			10	9
White Oak Farm							
Pelham Manor 4300—Westchester	Conv	NPA's'n	30			29	67
Pelham Home for Children							
Plattsburg 13349—Clinton	Inst	NPA's'n	12			5	6
Children's Home of Northern New York							
Pleasantville 4540—Westchester	Inst	NPA's'n	34				27J
Hebrew Sheltering Guardian Orphan Asylum	Inst	NPA's'n	34				
Pt Jervis 10245—Orange	Gen	Corp	13	3	18	7	246
Deerpark Hospital							
Poughkeepsie 40288—Dutchess	Inst	City	20			15	5
Poughkeepsie City Home and Infirmary	Surg	Indiv	9			8	150
Sadler Hospital	Inst	NPA's'n	30			12	949
Swift Infirmary—Vassar College	Inst	NPA's'n	30				
Queens Village—Queens	Gen	Indiv	10	12	54	5	137
Queens Village Sanatorium							
Remsen 437—Oneida	Nerv	Indiv	15			1	10
Whitesboro Sanitarium and Adirondack Annex	Conv	Indiv	30			20	244
Rhinebeck 1069—Dutchess							
Holiday Farm Home for Convalescent Children	Conv	NPA's'n	48			44	164
Rochester 328132—Monroe	Conv	Indiv	10			14	63
Convalescent Hospital for Children	Conv	NPA's'n	48				
Field Sanitarium	Conv	Indiv	30			20	
Knorr Sanitarium Convalescent Home	Conv	NPA's'n	112			106	379
Rockaway Park—Queens	Conv	NPA's'n	112				
Convalescent Home for Hebrew Children							
Rome 32338—Oneida	MeDe	State	300	24	25	3027	300
Rome State School							
Rye 8712—Westchester	N&M	Indiv	33			26	93
Haleyon Rest							
Schenectady 9,692—Schenectady	Indus	Corp	10			3	217
General Electric Company Industrial Hospital	I o	City	30	6		17	334
Schenectady City Hospital	Inst	County	45			40	300
Schenectady County Home and Hospital							
Sea Cliff 3446—Nassau	Conv	NPA's'n	70			47	463
Country Home for Convalescent Babies							
Staten Island 108346—Richmond	Inst	City	1449			1042	692
New York City Farm Colony	Gen	NPA's'n	200			103	553
Salvors Snug Harbor Hosp	Chil	NPA's'n	190			104	742
Seaside Hospital							
Syracuse 209326—Onondaga	MeDe	State	1000			1047	151
Syracuse State School							
Thiells 390—Rockland	MeDe	State	3200			3061	301
Wetchworth Village							
Troy 72765—Rensselaer	Chr	County	68				
Rensselaer County Hospital	Inst	NPA's'n	52			4	427
Troy Orphan Asylum							
Tupper Lake 571—Franklin	Conv	NPA's'n	50			40	158
American Legion Mountain Camp							
Utica 101740—Oneida	Orth	NPA's'n	30			27	50
Children's Hospital Home of Utica							
Valhalla 670—Westchester	Orth	NPA's'n	72			63	90
Bethedale Hospital and Home for Crippled Children							
Valley Cottage 212—Rockland	Conv	Indiv	24			24	63
Reed Farm and Nichols Cottage							
Wassale 200—Dutchess	MeDe	State	3412			3496	617
Wassale State School							
Watertown 3220—Jefferson	Gen	County	20				63
Jefferson County Home							
White Plains 10,870—Westchester	Conv	NPA's'n	80			79	391
Convalescent Hospital for Children	Conv	Indiv	20			20	47
Martine Farm Children's Cardiac Home							
Williamsville 3119—Frie	Conv	Indiv	67			58	206
Isophine Goodyear Convalescent Home							
Yonkers 131646—Westchester	Inst	NPA's'n	20				201
Leake and Watts Home School	Conv	Indiv	13			10	
Sunny Rect Sanitarium							
Yonkers City Hospital for Communicable Diseases	I o	City	57			24	404
Yorktown Heights 1,700—Westchester	MeDe	Indiv	23			10	5
Sound View School							

Summary for New York

	Number	Beds	Average Patients	Patients Admitted
Hoitals and sanatoriums	460	143,206	1,070.3	1,079,537
Related in titution	10	23,447	29,974	43,976
Total	470	166,654	141,277	1,123,513
Refused registration	17	1,070		

NORTH CAROLINA

Hospitals and Sanatorium	Type of Service	Control	Beds, Rated Capacity	Bas Inets	Number of Births	Average Patients	Patients Admitted
Albemarle 3493—Stanly	Gen	NPA's'n	26	3	49	13	840
Stanly General Hospital	Gen	NPA's'n	32	4	62	10	898
Yadkin Hospital							
Asheboro 5021—Randolph	Gen	NPA's'n	36	6	63	16	750
Randolph Hospital							
Asheville 50193—Buncombe	TB	Corp	20			15	53
Ambler Heights Sanitarium	N&M	Corp	170			50	411
Appalachian Hall	Gen	NPA's'n	107	16	279	57	2,024
Asheville Mission Hospital							
Asheville Physiatric Institute	Nerv	Conv	Indiv	30		10	58
Wesnoea	Gen	NPA's'n	40	6		31	
Aston Park Hospital	TB	Indiv	130			26	30
Fairview Cottage Sanitarium	Surg	Corp	46	1	22	24	983
Norburn Hospital	TB	Church	96			60	77
St Joseph's Sanatorium	TB	Indiv	30			23	42
Zephyr Hill Sanatorium							
Badin 3040—Stanly	Gen	NPA's'n	26	3	16	5	361
Badin Hospital							
Banners Elk 340—Avery	Gen	Church	47	8	94	42	742
Grace Hospital							
Beaufort 2207—Carteret	Gen	NPA's'n	12	4	30	7	204
Potter Emergency Hospital							
Biltmore 172—Buncombe	Gen	NPA's'n	52	10	61	20	992
Biltmore Hospital							
Black Mountain 737—Buncombe	N&M	Corp	20			6	78
Beallmont Park Sanatorium	TB	Corp	20			16	10
Cragmont Sanatorium							
Fellowship Sanatorium of the Royal League	TB	Frat	20			15	10
Brevard 2390—Transylvania	Gen	NPA's'n	15			No data supplied	
Lyday Memorial Hospital							
Burlington 4737—Alamance	Gen	Corp	43	3	30	21	780
Rainey Hospital							
Charlotte 82670—Mecklenburg	F&T	Part	20			12	1,501
Charlotte Eye Ear and Throat Hospital	Gen	Church	62	3	102	38	1,904
Good Samaritan Hosp (col)	Gen	Church	92	26	400	74	2,938
Mercy Hospital	Gen	Corp	77	10	29	56	2,338
New Charlotte Sanatorium	Gen	Church	100	20	283	95	3,125
Presbyterian Hospital	Gen	Church	68	12	192	42	1,729
St Peter's Hospital							
Cherokee 3—Swain	Gen	I A	20	4	43	12	444
Eastern Cherokee Indian Hosp							
Concord 11890—Cabarrus	Gen	NPA's'n	20	4	20	10	311
Concord Hospital							
Crossnore 181—Avery	Gen	NPA's'n	20	7	52	9	693
Garrett Memorial Hospital							
Durham 2037—Durham	Gen	NPA's'n	406	30	738	277	8,800
Duke Hospital	Gen	NPA's'n	90	9	127	68	1,768
Lincoln Hospital (col)*	Gen	NPA's'n	20			6	849
McPherson Hospital	F&T	Indiv	20				
Watts Hospital**	Gen	NPA's'n	200	20	470	151	5,770
Elizabeth City 10037—Pasquotank	Gen	NPA's'n	30	6	37	20	700
Albemarle Hospital							
Elkin 2337—Surry	Gen	Church	36	4	68	29	1,120
Hugh Chatham Memorial Hosp							
Erwin 4000—Harnett	Gen	NPA's'n	22	8	80	8	264
Good Hope Hospital							
Fayetteville 13049—Cumberland	Gen	NPA's'n	120	5	114	90	2,906
Highsmith Hospital	Gen	NPA's'n	80	10	70	61	1,741
Pittman Hospital							
Fletcher 60—Henderson	Gen	Church	40	3	30	20	46
Mountain Sanitarium and Hosp							
Et Bragg—Cumberland	Gen	Army	83	5	94	71	1,297
Station Hospital							
Franklin 1094—Macon	Gen	NPA's'n	52	4	31	26	1,129
Angel Hospital							
Gastonia 17093—Gaston	Gen	Corp	60	8	30	18	108
City Hospital	Gen	Corp	40	6	62	13	610
Carlson General Hospital							
North Carolina Orthopedic Hospital	Orth	State	100			101	99
Goldboro 14085—Wayne	Gen	NPA's'n	94	6	52	22	1,740
Goldboro Hospital	Vent	State	1,019			1,880	466
State Hospital (col)							
Creensboro 3369—Guilford	Gen	NPA's'n	40	5	86	37	1,277
Clinic Hospital	N&M	Indiv	20			23	388
Glenwood Park Sanitarium							
L. Richard on Memorial Hospital (col)*	Gen	NPA's'n	60	4	27	20	706
St Leo's Hospital	Gen	Church	20	6	85	30	1,781
Sternberger Children's Hosp	Gen	NPA's'n	20	8	106	20	1,14
Wesley Long Hospital	Gen	NPA's'n	60	10	60	42	
Greenville 9194—Pitt	Gen	Corp	60	4	41	17	969
Pitt Community Hospital							
Hamlet 4801—Richmond	Gen	NPA's'n	47	3	26	38	840
Hamlet Hospital							
Henderson 1043—Vance	Gen	Church	20	4	29	17	440
Jubilee Hospital (col)	Gen	NPA's'n	40	5	107	18	1,102
Maria Parham Hospital							
Hendersonville 1000—Henderson	Gen	NPA's'n	40	7	41	10	670
Patton Memorial Hospital							
Hickory 7763—Catawba	Gen	Corp	28	6	60	19	769
City Memorial Hospital	Gen	Indiv	20	6	90		
Richard Baker Hospital							
High Point 774—Guilford	Gen	NPA's'n	68	7	89	40	1,900
Burrus Memorial Hospital	Gen	NPA's'n	60	6	70	22	944
Cullford General Hospital							
Huntersville 506—Mecklenburg	TB	County	162			14	1,7
Mecklenburg Sanatorium							
Immetstown 157—Guilford	TB	County	111			108	112
Cullford County Sanatorium							
Clinton 1192—Lenoir	Gen	NPA's'n	47	3	78	20	1,416
Memorial General Hospital	Gen	NPA's'n	50	10		23	
Parrott Memorial Hospital							

Key to symbols and abbreviations is on page 798

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Laurinburg 3 312—Scotland	Gen	NPAsen	30	3	19	14	370
Laurinburg Hospital	Gen	NPAsen	70	5	33	20	1 110
Leaksville 1,814—Rockingham	Gen	NPAsen	21	2	22	12	613
Leaksville Hospital	Gen	NPAsen	24	6	29	8	370
Lenoir 6 532—Caldwell	Gen	NPAsen	21	2	22	12	613
Caldwell Hospital	Gen	NPAsen	24	6	29	8	370
Lexington 9 602—Davidson	Gen	NPAsen	24	6	29	8	370
Davidson Hospital	Gen	NPAsen	24	6	29	8	370
Lincolnton 3 781—Lincoln	Gen	NPAsen	24	6	29	8	370
Lincoln Hospital	Gen	NPAsen	24	6	29	8	370
Reveries Hospital	Gen	NPAsen	24	6	29	8	370
Lumberton 4 140—Robe on	Gen	NPAsen	24	6	29	8	370
Baker Sanatorium	Gen	NPAsen	24	6	29	8	370
Thompson Memorial Hospital	Gen	NPAsen	24	6	29	8	370
Marion 2 467—McDowell	Gen	NPAsen	24	6	29	8	370
Marion General Hospital	Gen	NPAsen	24	6	29	8	370
Monroe 6 100—Union	Gen	NPAsen	24	6	29	8	370
Ellen Fitzgerald Hospital	Gen	NPAsen	24	6	29	8	370
Mooreville 5 619—Iredell	Gen	NPAsen	24	6	29	8	370
Lowrance Hospital	Gen	NPAsen	24	6	29	8	370
Morehead City 2 487—Carteret	Gen	NPAsen	24	6	29	8	370
Morehead City Hospital	Gen	NPAsen	24	6	29	8	370
Morganton 6 001—Burke	Gen	NPAsen	24	6	29	8	370
Broadlands Sanatorium	Gen	NPAsen	24	6	29	8	370
Grace Hospital	Gen	NPAsen	24	6	29	8	370
Stato Hospital	Gen	NPAsen	24	6	29	8	370
Mt. Airy 6 045—Surry	Gen	NPAsen	24	6	29	8	370
Martin Memorial Hospital	Gen	NPAsen	24	6	29	8	370
Murphy 1 612—Cherokee	Gen	NPAsen	24	6	29	8	370
Petrie Hospital	Gen	NPAsen	24	6	29	8	370
New Bern 11 981—Craven	Gen	NPAsen	24	6	29	8	370
St. Luke's Hospital	Gen	NPAsen	24	6	29	8	370
North Wilkesboro 3 668—Wilkes	Gen	NPAsen	24	6	29	8	370
Wilkes Hospital	Gen	NPAsen	24	6	29	8	370
Oteen 504—Buncombe	Gen	NPAsen	24	6	29	8	370
Veterans Admin Facility	Gen	NPAsen	24	6	29	8	370
Oxford 4 101—Granville	Gen	NPAsen	24	6	29	8	370
Brantwood Hospital	Gen	NPAsen	24	6	29	8	370
Susie Kelly Cheatham Memorial Hospital (col)	Gen	NPAsen	24	6	29	8	370
Pinehurst 5—Moore	Gen	NPAsen	24	6	29	8	370
Moore County Hospital	Gen	NPAsen	24	6	29	8	370
Raleigh 37 770—Wake	Gen	NPAsen	24	6	29	8	370
Mary Elizabeth Hospital	Gen	NPAsen	24	6	29	8	370
Rea Hospital	Gen	NPAsen	24	6	29	8	370
St. Agnes Hospital (col)*	Gen	NPAsen	24	6	29	8	370
State Hospital	Gen	NPAsen	24	6	29	8	370
Reidsville 6 811—Rockingham	Gen	NPAsen	24	6	29	8	370
Memorial Hospital	Gen	NPAsen	24	6	29	8	370
Roanoke Rapids 2 404—Halifax	Gen	NPAsen	24	6	29	8	370
Roanoke Rapids Hospital	Gen	NPAsen	24	6	29	8	370
Rocky Mount 21 412—Edgecombe	Gen	NPAsen	24	6	29	8	370
Atlantic Coast Line Hospital	Gen	NPAsen	24	6	29	8	370
Park View Hospital	Gen	NPAsen	24	6	29	8	370
Rocky Mount Sanatorium	Gen	NPAsen	24	6	29	8	370
Rutherford 2 020—Rutherford	Gen	NPAsen	24	6	29	8	370
Rutherford Hospital	Gen	NPAsen	24	6	29	8	370
Sylva 16 951—Rowan	Gen	NPAsen	24	6	29	8	370
Rowan General Hospital	Gen	NPAsen	24	6	29	8	370
Sanatorium 57—Hoke	Gen	NPAsen	24	6	29	8	370
North Carolina Sanatorium for the Treatment of Tuberculosis	Gen	NPAsen	24	6	29	8	370
Sanford 4 243—Lee	Gen	NPAsen	24	6	29	8	370
Lee County Hospital	Gen	NPAsen	24	6	29	8	370
Shelby 10 789—Cleveland	Gen	NPAsen	24	6	29	8	370
Shelby Hospital	Gen	NPAsen	24	6	29	8	370
Smithfield 2 413—Johnston	Gen	NPAsen	24	6	29	8	370
Johnston County Hospital	Gen	NPAsen	24	6	29	8	370
Southern Pines 2 524—Moore	Gen	NPAsen	24	6	29	8	370
Pine Crest Manor Sanatorium	Gen	NPAsen	24	6	29	8	370
Southport 1 700—Brunswick	Gen	NPAsen	24	6	29	8	370
Brunswick County Hospital	Gen	NPAsen	24	6	29	8	370
Stateville 10 490—Iredell	Gen	NPAsen	24	6	29	8	370
David's Hospital	Gen	NPAsen	24	6	29	8	370
H F Long Hospital	Gen	NPAsen	24	6	29	8	370
Sylva 1 340—Jackson	Gen	NPAsen	24	6	29	8	370
C I Harris Community Hosp	Gen	NPAsen	24	6	29	8	370
Tarboro 6 379—Edgecombe	Gen	NPAsen	24	6	29	8	370
Bass Memorial Hospital	Gen	NPAsen	24	6	29	8	370
Edgecombe General Hospital	Gen	NPAsen	24	6	29	8	370
Thomasville 10 090—Davidson	Gen	NPAsen	24	6	29	8	370
City Memorial Hospital	Gen	NPAsen	24	6	29	8	370
Tryon 1 670—Polk	Gen	NPAsen	24	6	29	8	370
St. Luke's Hospital	Gen	NPAsen	24	6	29	8	370
Wadesboro 2 124—Anson	Gen	NPAsen	24	6	29	8	370
Anson Sanatorium	Gen	NPAsen	24	6	29	8	370
Washington 7 070—Beaufort	Gen	NPAsen	24	6	29	8	370
Tavlos Hospital	Gen	NPAsen	24	6	29	8	370
Waynesville 2 414—Haywood	Gen	NPAsen	24	6	29	8	370
Haywood County Hospital	Gen	NPAsen	24	6	29	8	370
Whiteville 2 203—Columbus	Gen	NPAsen	24	6	29	8	370
Columbus County Hospital	Gen	NPAsen	24	6	29	8	370
Wilmington 12 612—Wilson	Gen	NPAsen	24	6	29	8	370
Wilson General Hospital	Gen	NPAsen	24	6	29	8	370
Woodard Herring Hospital	Gen	NPAsen	24	6	29	8	370
Winston Salem 75 274—Forsyth	Gen	NPAsen	24	6	29	8	370
City Memorial Hospital	Gen	NPAsen	24	6	29	8	370
Forsyth County Sanatorium	Gen	NPAsen	24	6	29	8	370
North Carolina Baptist Ho p	Gen	NPAsen	24	6	29	8	370

NORTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Wrightsville Sound 23—New Hanover	Chil	NPAsen	30	5		14	106
Babies Hospital	Chil	NPAsen	30	5		14	106
Related Institutions							
Asheville 30 190—Buncombe	TB	Indiv	2			10	24
Flinchburg Cottage Sanitarium	TB	Corp	2			10	44
Sunset Heights	TB	Corp	2			10	24
Violet Hill Sanatorium	TB	Indiv	2			10	56
Biltmore 172—Buncombe	TB	Part	2			17	60
Hillcroft Sanatorium	TB	Indiv	2			12	
Onteora Lodge	TB	Indiv	2			12	
Candler 30—Buncombe	Gen	Church	2	2	7	5	231
Pisgah Sanitarium and Hosp	Gen	Church	2	2	7	5	231
Charlotte 82 67—Mecklenburg	Gen	Church	2	2	7	5	231
Florence Crittenton Industrial Home	Mat	NPAsen	70	4	9	6	70
Thompson Orphanage and Training Institution	Inst	Church	12	4		3	170
Davidson 1 440—Mecklenburg	Inst	NPAsen	17			3	149
Davidson College Infirmary	Inst	NPAsen	17			3	149
Durham 32 037—Durham	Mat	Church	40	30	70	40	80
Salvation Army Home and Hospital	Mat	Church	40	30	70	40	80
Fayetteville 13 049—Cumberland	Gen	Church	10			3	441
Fayetteville Eye Ear Nose and Throat Hospital	Gen	Church	10			3	441
Halifax 21—Halifax	Gen	Church	10			3	441
Halifax County Tuberculosis Sanitarium	TB	County	24			17	41
Henderson 6 340—Vance	TB	County	14				
Scott Parker Sanatorium	TB	County	14				
Kingston 11 362—Lenoir	MeDe	State	52	12		2	332
Caswell Training School	MeDe	State	52	12		2	332
Lenoir 6 332—Caldwell	Gen	Indiv	12	2	16	6	360
Dula Ho pital	Gen	Indiv	12	2	16	6	360
Monroe 6 100—Union	Gen	Indiv	11	4	5	4	10
Quality Hill Sanitarium (col)	Gen	Indiv	11	4	5	4	10
North Wilkesboro 3 668—Wilkes	Gen	Indiv	11	4	5	4	10
Wilkes County Tuberculosis Inst	Gen	Indiv	11	4	5	4	10
Oxford 4 101—Granville	Gen	Indiv	11	4	5	4	10
Wm J Hick Memorial Hosp	Inst	Frat	72			6	92
Raleigh 37 379—Wake	Gen	Indiv	10	2	2	4	144
McAuley Private Hosp (col)	Gen	Indiv	10	2	2	4	144
North Carolina State School for the Blind and Deaf	Inst	State	18			2	170
Saluda 538—Polk	Chil	Indiv	2			15	141
Infants and Children Sanit	Chil	NPAsen	2			2	
Spartanburg Baby Hospital	Chil	NPAsen	2			2	
Thomasville 10 090—Davidson	Inst	Church	70			2	
Mills Home Infirmary	Inst	Church	70			2	
Washington 7 030—Beaufort	Gen	NPAsen	10	2	10	10	400
S R Lowe Memorial Hospital	Gen	NPAsen	10	2	10	10	400
Wilson 12 611—Wilson	Gen	CyCo	30	2	14	18	444
Mercy Hospital (col)	Gen	CyCo	30	2	14	18	444

Summary for North Carolina

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	126	14 660	11 30	1,122
Related institutions	22	68	76	3 397
Totals	148	14 728	11 361	174 619
Refused registration	4	15		

NORTH DAKOTA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Belcourt 20—Rolette	Gen	IA	2	5	17	38	1 116
Purtle Mountain Hospital	Gen	IA	2	5	17	38	1 116
Bismarck 11 090—Burleigh	Gen	Church	128	12	170	80	2 701
Bismarck Hospital	Gen	Church	144	12	187	107	2 621
St. Alexius Hospital	Gen	Church	60	7	111	40	1 440
Bottineau 1 322—Bottineau	Gen	Church	60	7	111	40	1 440
St. Andrew's Hospital	Gen	Church	60	7	111	40	1 440
Carrington 1 717—Foster	Gen	Corp	20	6	20	12	500
Carrington Hospital	Gen	Corp	20	6	20	12	500
Devils Lake 4 411—Ramsey	Gen	NPAsen	41	6	30	75	1 799
General Hospital	Gen	NPAsen	41	6	30	75	1 799
Mercy Hospital	Gen	Church	77	12	146	50	1 947
Dickinson 62—Stark	Gen	Church	81	10	130	42	1 181
St. Joseph's Hospital	Gen	Church	81	10	130	42	1 181
Drayton 30—Pembina	Gen	NPAsen	14	2	33	10	446
Drayton Hospital	Gen	NPAsen	14	2	33	10	446
Edgeley 821—LeMoure	Gen	Indiv	14			7	201
Edgeley Hospital	Gen	Indiv	14			7	201
Fargo 25 619—Cass	Gen	Church	170	20	411	8	3 247
St. John's Hospital	Gen	Church	108	17	109	60	2 337
St. Luke's Hospital	Gen	Church	100			99	761
Veterans Admin Facility	Gen	Vet	100			99	761
Ft. Lincoln (Bismarck P O)—Purleigh	Gen	Army	8			30	50
Station Ho pital	Gen	Army	8			30	50
Ft. Totten 61—Ben on	Gen	IA	21	4	51	21	911
Ft. Totten Ho pital	Gen	IA	21	4	51	21	911
It Late 400—Sour	Gen	IA	26	11	30	20	72
Standing Rock Indian Hospital	Gen	IA	26	11	30	20	72
Grafton 176—Walsh	Gen	Church	44	6	224	29	1 277
Grafton Deaconess Hospital	Gen	Church	44	6	224	29	1 277
Grand Forks 17 112—Grand Forks	Gen	NPAsen	81	20	23	58	2 477
Grand Forks Deaconess Ho p	Gen	NPAsen	81	20	23	58	2 477
St. Michael's Hospital	Gen	Church	50	15	192	38	1 612

NORTH DAKOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Harvey 217—Wells Good Samaritan Ho pital and Sanitarium	Gen	NPA ssn	40	6	62	12	300
Jamestown 187—Stutsman North Dakota State Hospital for Insane	Ment	State	2 000		1 777	423	
Trinity Hospital	Gen	Church	75	12	146	54	1 935
Kenmare 1494—Ward Kenmare Deaconess Ho pital	Cen	Church	40	5	77	20	673
Linton 1192—Jimmison Linton Ho-pital	Cen	Part	16	2	4	90	
Mandan 657—Morton Mandan Deaconess Ho pital	Cen	Church	40	6	122	44	1 87
McVillage 517—Nelson Community Hospital	Cen	Corp	17	4	33	6	78
Minot 16 099—Ward McConnell's Private Hospital St Joseph's Hospital	INT	Indiv	10	1	8	660	
Trinity Hospital	Cen	Church	100	14	175	64	2 34
New Rockford 219—Eddy Donahue Hospital	Cen	Indiv	14	16	27	174	1 970
Northwood 911—Grand Forks Northwood Deaconess Ho pital	Cen	NPA n	10	3	40	4	205
Onkes 1 409—Dickey St Anthony's Hospital	Cen	Church	20	4	7	11	460
Rolette 428—Rolette Community Ho-pital	Gen	NPA ssn	20	5	24	5	212
Rugby 1 512—Pierce Good Samaritan Hospital	Cen	Church	20	6	70	10	960
San Haven—Rolette North Dakota State Inheren tios Sanitarium	FB	State	268		21	206	
Valley City 5 268—Barnes Mercy Hospital	Cen	Church	57	17	140	2	1 000
Wahpeton 3 176—Richland Wahpeton Hospital	Cen	Part	30	6	19	10	38
Williston 5 106—Williams Good Samaritan Ho pital	Cen	Church	4	7	11	3	1 18
Mercy Ho pital	Cen	Church	7	10	104	36	1 11

Related Institutions

Ambrose 374—Divide Good Samaritan Ho-pital	Cen	Church	15	4	24	13	91
Arvilla 148—Grand Forks Grand Forks County Hospital	Inst	County	40	2	5	30	30
Bismarck 11 000—Burleigh North Dakota State Peniten tiary Hospital	Inst	State	65		24	264	
Bowman 888—Bowman Bowman Hospital	Cen	Indiv	7	6	10	3	170
Ellis 100—McLean Ft Berthold Indian Ho pital	Cen	IA	0	1	12	12	708
Elgin 50—Grant Elgin Ho-pital	Cen	Indiv	6	12	20	0	121
Fargo 26 619—Cass Camp Maternity Ho pital Cass County Hospital	Mat	Indiv	11	11	8	2	79
Florence Crittenton Home	Gen	County	0	6	61	18	78
Grafton 176—Walsh Grafton State School	McD	State	60		70	40	11
Grand Forks 17 112—Grand Forks Grand Forks City Ho pital	Isa	City	16		3	98	
Jamestown 187—Stutsman Isolation Ho pital	Isa	CIA	10		10	New	9
Jamestown Hospital	Cen	NPA ssn	40	10			
Mayville 1 199—Traill Union Hospital	Cen	NPA ssn	16	6	31	6	4
Wahpeton 3 176—Richland Wahpeton Indian School Hosp	Int	IA	24		6	227	

Summary for North Dakota

	Number	Beds	Average Patients	Patients Admitted
Hospital and sanatorium	5	4 196	41	47 57
Related institutions	5	1 162	71	129
Totals	10	5 358	47	50 861
Refused registration	0	0	0	0

OHIO

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Alton 25 040—Summit Children's Ho pital	Chil	NPA ssn	110		81	2 813	
City Ho pital	Cen	NPA ssn	12	1 112	21	6 740	
Edwin Shaw Sanatorium	FB	County	20		20	176	
Leopold Hospital	Cen	NPA ssn	16	20	1	3	1
St Thomas Hospital	Cen	Church	140	29	12	4 215	
Alliance 21 041—Stark Alliance City Ho pital	Cen	City	6	1	169	41	144
Amherst 2 541—Torrain Torrain View Sanatorium	FB	County	20		20	179	
Ashtabula 11 141—Ashtabula Sanitarium Hospital	Cen	NPA n	20	1	99	17	7
Ashtabula 11 01—Ashtabula Ashtabula General Ho pital	Gen	NPA n	76	14	94	44	1 175
Athen 7 21—Athen Athen State Ho pital	Ment	State	1 000		1 604	253	
Sheltering Arms Ho pital	Cen	Indiv	2	6	47	17	8
Burton 23 001—Summit City Ho pital	Cen	Corp	40	10	14	107	

OHIO—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Barnesville 4 602—Belmont Barnesville General Hospital	Cen	Corp	14	4	14	199	
Bedford 6 814—Cuyahoga Bedford Municipal Hospital	Cen	City	27	9	129	19	355
Bellaire 15 327—Belmont City Hospital	Gen	NPA ssn	45	5	93	27	837
Bellevue 6 256—Huron Bellevue Hospital	Cen	NPA ssn	29	6	61	9	340
Berea 5 697—Cuyahoga Community Hospital	Cen	NPA ssn	22	8	114	18	728
Bucyrus 10 021—Crawford Bucyrus City Hospital	Cen	City	37	6	12	10	650
Cambridge 14 615—Guernsey St Francis Hospital	Gen	Church	25	3	9	9	282
Canton 104 906—Stark Aultman Hospital	Cen	NPA ssn	137	24	351	80	2 460
McVey Hospital	Cen	Church	182	32	64	126	4 161
Molly Stark Sanatorium	FB	County	167			155	276
Celina 4 664—Mercer Otis Hospital	Cen	Indiv	19	4	23	5	287
Chillicothe 18 340—Ross Chillicothe Hospital	Gen	NPA ssn	60	6	16	30	67
Mt Logan Sanatorium	FB	County	60			58	48
Industrial Reformatory	Inst	USPHS	96			11	928
Veterans Admin Facility	Ment	Yat	944			1 076	538
Cincinnati 1 160—Hamilton Bethesda Hospital	Gen	Church	227	40	691	147	1 517
Children's Hospital	Chil	Church	216			140	4 087
Christ Hospital	Cen	Church	321	48	571	171	5 343
Christian R Holmes Hospital	Gen	City	30			30	907
Cincinnati General Hospital	Cen	City	800	60	1 946	764	16 236
Cincinnati Sanitarium	N&M	Corp	75			61	120
Deaconess Hospital	Gen	Church	130	25	462	112	418
Good Samaritan Ho pital	Cen	Church	465	70	1 259	41	1 147
Crandview Hospital	N&M	Corp	40			18	94
Hamilton County Tuberculo sanatorium	FB	County	639			627	68
Jewish Hospital	Cen	NPA ssn	225	37	641	156	5 201
Longview State Hospital	Ment	State	502			177	708
St Mary Hospital	Gen	Church	194	25	702	154	4 043
Circleville 7 761—Pickaway Bergner Hospital	Cen	City	25	4	32	4	401
Cleveland 900 421—Cuyahoga Babies and Childrens Ho pital	Unit of University Hospitals	Chil	20			211	3 409
Charity Hospital	Cen	City	1 640	50	1 111	774	10 897
City Hospital	Unit of City Hospital						
Cleveland Clinic Foundation Hospital	Gen	NPA ssn	240			118	4 330
Cleveland State Hospital	Ment	State	500			2 619	460
East 10th Street Hospital	Gen	Corp	60	12	Not data supplied		
Evangelical Deaconess Ho pital	Cen	Church	109	15	434	6	2 010
Fairview Park Hospital	Cen	Church	90	18	269	72	2 787
Glenview Hospital	Cen	NPA ssn	85	21	290	65	1 194
Grace Hospital	Cen	NPA ssn	32			1	16
Huron Road Hospital	See East Cleveland						
John H Lowman Memorial Pavilion	Tuberculous Unit of City Hospital						
Leidesdorf Hospital	Unit of University Hospitals						
Leonard C Hanna House	Unit of University Hospitals						
Lutheran Hospital	Gen	Church	142	11	694	90	5 407
Maternity Hospital	Unit of University Hospitals						
Mt Sinai Hospital	Gen	NPA ssn	22	45	597	147	6 774
Polyclinic Hospital	Gen	NPA ssn	50	20	237	363	2 060
Provident Hospital	Cen	NPA ssn	25	12	106	197	
St Alexis Hospital	Gen	Church	220			131	4 000
St Ann's Maternity Hospital	Mat	Church	50	39	993	28	1 114
St John's Hospital	Cen	Church	172	32	684	137	4 043
St Luke's Hospital	Cen	Church	227	11	1 011	209	7 062
Shaker Sanitarium	N&M	Corp	110			87	90
U S Marine Hospital	Cen	USPHS	231			167	1 000
University Hospital	Gen	NPA ssn	513	109	1 578	462	1 706
Wind or Hospital	N&M	Corp	110			95	129
Woman's Hospital	Gen	NPA n	89	31	260	4	1 609
Columbus 290 561—Franklin Children's Hospital	Chil	NPA ssn	88	12		74	3 021
Columbus Radium Hospital	Gen	NPA ssn	60		121	19	712
Columbus State Ho pital	Ment	State	2 900			2 85	697
Franklin County Sanatorium	FB	County	210			198	200
Dr Gaver Sanitarium	N&M	Indiv	27			12	120
Grant Hospital	Gen	NPA ssn	27	30	474	11	960
McAllen Sanitarium	N&M	Corp	20			20	124
Mercy Hospital	Gen	NPA ssn	65	15	166	40	1 830
Mt Carmel Hospital	Cen	Church	214	25	741	118	7 635
St Ann's Infant Asylum and Maternity Hospital	Mat	Church	25	25	379	8	996
St Anthony's Hospital	Gen	Church	220			200	577
St Clair Hospital	Gen	NPA n	70	4	11	10	301
St Francis Hospital	Gen	Church	138			120	3 122
Starling Links Univer sity Ho pital	Cen	State	25	27	443	165	4 808
Station Ho pital	Cen	Army	150	4	20	90	1 181
White Cro's Hospital	Cen	Church	746	28	634	141	1 023
Connecticut 9 091—Ashtabula Brown Memorial Ho pital	Gen	NPA ssn	70		78	16	629
Coshocton 10 900—Coshocton Coshocton City Ho pital	Gen	City	76	8	79	25	1 141
Crestline 4 425—Crawford Crestline Emergency Ho pital	Gen	NPA ssn	16	4	25	4	111
Cuyahoga Fall 19 79—Summit Fair Oaks Villa	N&M	Corp	55			40	168
Dayton 200 082—Montgomery Dayton State Hospital	Ment	State	1 616			1 84	518
Good Samaritan Ho pital	Gen	Church	200	40	401	84	2 741
Miami Valley Hospital	Gen	NPA n	200	44	522	212	6 093

Key to symbols and abbreviations is on page 798

OHIO—Continued

Related Institutions	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Hamilton County Home and Chronic Disease Hospital	Gen Inst	County	189			170	663
Home for Incurables	Inc	NPA n	73			70	13
Jewish Convalescent Home	Conv	NPA n	100				500
Maple Knoll Hospital and Home for the Friendless	Mat	NPA n	83	15	129	50	165
Ophthalmic Hospital	ENT	Indiv	10			2	182
Ridge Rest Home	N&M	Corp	33			20	63
St. Francis Hospital for Incurables	Inc	Church	322			2.6	159
St. Joseph Maternity Hospital and Infant Asylum	Mat	Church	150	30	102	6	102
Cleveland 900 429—Cuyahoga Booth Memorial Home and Hospital	Mat	Church	13	12	314	11	322
Children's Fresh Air Camp and Hospital	Conv	NPA n	60			58	226
Convalescent Tuberculosis Hospital	TB	City	48			44	63
Emergency Hospital	Emer	Part	20			10	385
Florence Crittenton Home	Mat	NPA n	13	13	13	8	17
Jewish Orphan's Home	Inst	Frat	40			7	533
Columbus 290 564—Franklin Florence Crittenton Home	Mat	NPA n	28	24	52	30	60
Franklin County Home	Inst	County	123		6	124	163
Institution for Feeble-minded	McDe	State	2 100		2 064	309	
Ohio Penitentiary Hospital	Inst	State	187			100	48.2
Sanor Eye Ear Nose and Throat Hospital	ENT	Indiv	13				188
Covington 1 807—Miami Covington Hospital	Gen	Indiv	6	2	2		57
Delaware 8 676—Delaware Girls Industrial School Hosp	Inst	State	32			16	320
Enclid 12 731—Cuyahoga Ream Sanitarium	Conv	Corp	80			50	53
Rose-Mary Home	Orth	Church	24			22	18
Fairfield 1 240—Greene Station Hospital	Gen	Army	23				19
Granville 1 467—Licking Whisler Hall Memorial Hosp	Inst	NPA n	20			5	288
Greenfield 3 871—Highland Greenfield Hospital	Gen	NPA n	15	3		5	106
Hamilton 12 176—Butler Ruth Hospital	Inst	NPA n	15			5	
Hecksville 2 443—Defiance Amaden Hospital	Gen	Indiv	7	3	3	2	78
Lancaster 18 716—Fairfield Boys Industrial School Hosp	Inst	State	100			30	1 008
Lebanon 3 222—Warren Blair Brothers Hospital	Gen	Part	8	3	28	5	212
Mansfield 33 52—Richland Ohio State Reformatory	In t	State	91			43	1 733
Thomas Sanatorium	N&M	Indiv	18			4	7
Marysville 3 639—Union Ohio Reformatory for Women	Inst	State	36	3	6	6	278
Mt. Vernon 9 330—Knox Avalon Sanatorium	TB	Indiv	36			20	
Munroe Falls 302—Summit Summit County Hospital	In t	County	100			80	400
Napoleon 4 543—Henry S. M. Heller Memorial Hospital	Gen	City	14	3	4	5	239
New London 1 597—Huron New London Hospital	Gen	NPA n	9	3	17	3	141
Orient 233—Pickaway Institution for Feeble-minded	McDe	State	2 340			2 529	121
Oxford 2 585—Butler Miami University Student Hosp	Inst	State	24			9	990
Reynoldsburg 562—Franklin Nightingale Cottage	TBChil	NPA n	30			27	30
Springfield 68 743—Clark Ohio Rebekah Hospital	Inst	Frat	73			47	282
Rickly Memorial Hospital	Inst	Frat	283			2.8	86
Springfield Eye Ear Nose and Throat Hospital	ENT	Indiv	6	2			148
State Soldiers Home—Frie Ohio Soldiers and Sailors Home Hospital	Inst	State	217			101	509
Tiffin 16 428—Seneca Kentucky Memorial Hospital	Inst	Frat	50			16	1 400
Toledo 290 718—Lucas Lucas County Hospital Annex	Chr	County	110			108	138
Municipal Hospital for Contagious Diseases	Is	City	44	8		10	240
Warrensville 1 507—Cuyahoga Cleveland City Infirmary	MentInst	City	169			163	380
Wickliffe 2 491—Lake Ridge-Cliff Sanitarium	N&M	Corp	80			63	29
Wooster 10 742—Wayne Hygela Hall	Inst	NPA n	23			4	332
Yenia 10 407—Greene Ohio Soldiers and Sailors Orphans Home Hospital	Inst	State	70			29	1 49
Yellow Springs 1 407—Greene Antioch College Infirmary	Inst	NPA n	10			4	3.6
Youngstown 170 002—Mahoning Youngtown Municipal Hosp	Is	City	63			2	56
Summary for Ohio							
			Number	Beds	Average Patients	Patients Admitted	
Hospitals and sanatoriums			189	4 736	39 081	37 733	
Related institutions			64	8 785	7 46	25 038	
Totals			253	5 621	46 547	62 771	
Refused registration			29	623			

OKLAHOMA

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Ada 11 261—Pontotoc Ada Hospital	Gen	Corp	30	6	34	7	693
Breco's Memorial Hospital	Gen	NPA n	23	2	58	7	463
Altus 8 433—Jackson City Hospital	Gen	City	20	2	18	5	300
Alva 5 121—Woods Alva General Hospital	Gen	City	30	6	32	20	770
Anadarko 5 036—Caddo Anadarko Hospital	Gen	Indiv	22	3	30	13	590
Ardmore 15 741—Carter Hardy Sanitarium	Gen	Indiv	44	8	75	16	700
Von Keller Hospital and Clinic	Gen	NPA n	23	2	30	9	334
Bartlesville 14 763—Washington Washington County Memorial Hospital	Gen	County	50	10	163	19	918
Beaver 1 028—Beaver Beaver Hospital	Gen	Part	23	3	23	6	331
Blackwell 9 571—Kay Blackwell Hospital	Gen	NPA n	25	3	71	7	265
Leslie Sanatorium	Gen	Indiv	20	5	78	9	508
Butler 473—Custer Sunnyside Hospital	Gen	Indiv	12	2	11	11	503
Cherokee 2 236—Atlatia Masonic Hospital	Gen	Frat	50	7	58	20	704
Chickasha 14 099—Grady Chickasha Hospital	Gen	Part	64	6	79	18	8.6
Cottage Hospital	Gen	Indiv	10	3	26	9	3.6
General Hospital	Gen	NPA n	20	3	36	5	468
Claremore 3 320—Rogers Claremore Indian Hospital	Gen	IA	40	8	111	38	782
Clinton 7 312—Custer Clinton Indian Hospital	Gen	IA	29	5	21	10	599
West Oklahoma Baptist Hosp	Gen	Church	75	10	26	25	1 325
Western Oklahoma Tuberculosis Sanatorium	TB	State	27			218	422
Concho 290—Canadian Cheyenne and Arapaho Hosp	Gen	IA	30	4	50	24	730
Cordell 2 936—Washita Florence Hospital	Gen	Indiv	30	2	20	5	236
Cushing 9 201—Payne Masonic Hospital	Gen	Frat	23	4	46	15	493
Duncan 8 363—Stephens Weedn Hospital	Gen	Indiv	40	6	25	15	682
Durant 7 463—Bryan Coker Hospital	Gen	Indiv	8	2	24	4	266
Durant Hospital	Gen	Corp	30	4	28	11	542
Elk City 5 666—Beckham Standifer Hospital	Gen	Indiv	20	2	No data supplied		
Tisdall Hospital	Gen	Part	53	8		15	
El Reno 9 354—Canadian Catto Hospital	Gen	Indiv	18	3	18	7	246
El Reno Sanitarium	Gen	Corp	51	4	36	16	670
U. S. Southwestern Reformatory	Inst	USPHS	40			24	629
Enid 23 339—Garfield Baptist Hospital	Gen	Church	50	24	110	20	9.7
Enid General Hospital	Gen	NPA n	73	10	No data supplied		
Enid Springs Sanitarium and Hospital	Gen	Indiv	33	4	73	21	824
Erick 2 231—Beckham Erick Hospital	Gen	NPA n	20	3	23	6	130
Fort Smith 3 419—Comanche Station Hospital	Gen	Army	304	5	113	191	5 736
Frederick 4 568—Tillman Frederick Clinic Hospital	Gen	Part	12	3	30	8	385
Spurgeon Arrington and Allen Hospital and Clinic	Gen	Corp	17			37	5 396
Grandfield 1 416—Tillman Grandfield Hospital	Gen	Indiv	15	2	64	4	210
Guthrie 9 582—Logan Cimarron Valley Wesley Hosp	Gen	NPA n	77	7	76	16	618
Duke Sanitarium	N&M	Corp	33			13	123
Henryetta 7 604—Okmulgee Henryetta Hospital	Gen	Indiv	15	2	28	7	446
Keystone Hospital	Gen	Indiv	14	2	No data supplied		
Hobart 4 932—Kiowa General Hospital	Gen	Part	18	4	84	6	496
Holdenville 7 268—Hughes Holdenville General Hospital	Gen	Indiv	23	4	22	9	391
Hollis 9 314—Harrison Hollis Hospital	Gen	Indiv	16	4	17	9	420
Honoma 3 433—Osage Honoma City Hospital	Gen	Indiv	16	3	49	3	289
Lawton 12 121—Comanche Kiowa Indian Hospital	Gen	IA	63	20	179	97	1 973
Southwestern Hospital	Gen	Part	23	4	30	4	307
Mangum 4 806—Greer Border Hospital and Clinic	Gen	Part	50	4		13	
Marlow 3 684—Stephens Weedn Hospital	Gen	Indiv	23	4	No data supplied		
Maud 4 326—Seminole Maud Hospital	Gen	Indiv	18	3		4	
McAlester 11 804—Pittsburg Albert Pike Hospital	Gen	Frat	53	6	78	10	8.6
St. Mary's Infirmary	Gen	Church	20	3	20	10	480
Miami 8 064—Ottawa Miami Baptist Hospital	Gen	Church	48	8	35	12	513
Muskogee 32 076—Muskogee Muskogee Provident Hosp (col)	Gen	City	20	2	4	8	111
Oklahoma Baptist Hospital	Gen	Church	83	12	277	40	1 507
Veterans Admin Facility	Gen	Vet	443			408	3 336
Norman 9 603—Cleveland Central Oklahoma State Hosp	Ment	State	2 200			2 370	1,304
Oklahoma City 153 359—Oklahoma Farm Sanatorium	TB	Indiv	22			17	140
Great Western Hospital (col)	Gen	Corp	23	2	4	13	140

Key to symbols and abbreviations is on page 798

OKLAHOMA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassinets	Number of Births	Average Patients	Patients Admitted
Oklahoma City General Hospital	Gen	Corp	86	13	217	76	3 223
Polyclinic Hospital	Gen	Indiv	7	6	14	41	1 614
Reconstruction Hospital and McBride Clinic	Orth	Part	2			9	379
St Anthony Hospital	Gen	Church	100	40	1 126	207	7 667
Sumaritan Hospital	Gen	Corp	48	6	139	26	1 699
State University Hospital and Crippled Children's Hosp	Gen	State	48	17	40	447	693
Wesley Hospital	Gen	Part	100	2	492	87	846
Okmulgee 17 007—Okmulgee	Gen	City	20	1	3		
Okmulgee City Colored Hosp	Gen	City	60	6	133	10	904
Okmulgee City Hospital	Gen	City					
Pauls Valley 4 23—Garvin	Gen	Part	10	2	44		1 2
Lindsey Johnson Hospital	Gen	City	31	4	40	9	382
Pawhuska 5 931—Osage	Gen	City	31	4	40	9	382
Pawhuska Municipal Hospital	Gen	City	31	4	40	9	382
Pawnee 2 562—Pawnee	Gen	IA	18	12	106	7	1 030
Pawnee Ponca Hospital	Gen	IA	18	12	106	7	1 030
Picher 7 773—Ottawa	Gen	Indiv	40			7	
American Hospital	Gen	Part	16	2	18	4	374
Ponca City 16 176—Kay	Gen	Church	50	12	276	30	1 816
Ponca City Hospital	Gen	Church	50	12	276	30	1 816
Prague 1 299—Lincoln	Gen	Indiv	10		1	4	196
Rollins Hospital	Gen	Indiv	10		1	4	196
Seminole 11 41—Seminole	Gen	Corp	22	2	No data supplied		
Shattuck 1 490—Ellis	Gen	Indiv	48	6	188	17	877
Shattuck Hospital	Gen	Indiv	48	6	188	17	877
Shawnee 2 28—Pottawatomie	Gen	Part	2		136	10	614
A C H Hospital	IB	IA	150			127	174
Shawnee Indian Sanatorium	Gen	City	70	8	104	20	1 190
Shawnee Municipal Hospital	Gen	City	70	8	104	20	1 190
Sulphur 4 242—Murray	IB	State	17			121	598
Soldiers Tubercular Sanatorium	IB	Part	20	2	9	6	175
Sulphur Sanatorium	IB	Part	20	2	9	6	175
Supply 270—Woodward	Gen	State	1 300			1 900	420
Western Oklahoma Hospital	Gen	State	1 300			1 900	420
Taft 90—Muskogee	Gen	State	1 300			1 900	420
State Hospital for Negro Indians	Ment	State	60			610	209
Tahlequah 1 032—Le Flore	IB	IA	7			0	136
Choctaw Chickasaw Sanat	IB	IA	7			0	136
Eastern Oklahoma State Tuberculosis Sanatorium	IB	State	20			20	392
Thomas 1 206—Custer	Gen	Indiv	20	2	16	5	141
Thomas Hospital	Gen	Indiv	20	2	16	5	141
Tonkawa 3 311—Kay	Gen	Indiv	20	4	14	2	129
Tonkawa Hospital	Gen	Indiv	20	4	14	2	129
Tulsa 141 238—Tulsa	Gen	Corp	30	12	261	12	844
Tulsa Hospital	Gen	Corp	30	12	261	12	844
Morningside Hospital	Gen	Corp	22	2	59	144	5 16
Municipal Hospital No 2 (col)	Gen	County	50	6	No data supplied		
Oakwood Sanatorium	N&M	Corp	26			20	284
St John's Hospital	Gen	Church	20	2	512	127	4 482
Sister Clinic Hospital	Orth	Indiv	100	2		15	200
Vinita 4 262—Craig	Gen	State	2 76			2 447	60
Eastern Oklahoma Hospital	Gen	Corp	10		28	8	79
Waurika 2 368—Jefferson	Gen	Corp	24	3	10	10	386
Waurika Hospital	Gen	Corp	24	3	10	10	386
Wewoka 10 401—Seminole	Gen	Corp	20	4	No data supplied		
Knight Hospital	Gen	Corp	20	4	38	9	200
Wewoka Hospital	Gen	Corp	20	4	38	9	200
Woodward 1 036—Woodward	Gen	NPA'sen	30	4		6	
Woodward General Hospital	Gen	NPA'sen	30	4		6	
Related Institutions							
Chillico 250—Kay	Gen	IA	47	1		6	410
Chillico Indian School Ho p	Gen	IA	47	1		6	410
Durant 7 463—Bryan	Gen	Indiv	10	1	1	2	84
Bryan County Hospital	Gen	Indiv	10	1	1	2	84
Lind 2 296—Carrifield	Gen	State	922			70	1 3
northern Oklahoma Hospital	McDe	State	922			70	1 3
Linn 2 134—Osage	Gen	Corp	1	2	2	4	247
Linn Hospital	Gen	Corp	1	2	2	4	247
St Reno (El Reno P O)—Canadian	Gen	Army	12				61
Station Hospital	Gen	Army	12				61
Vealester 11 604—Pittsburg	Inst	State	0			70	1 113
Oklahoma State Prison Hosp	Inst	State	0			70	1 113
Nowata 3 531—Nowata	Gen	Indiv	14	2	30	6	132
Nowata Hospital	Gen	Indiv	14	2	30	6	132
Okeene 10—Blaine	Gen	Indiv	10	2	11	2	50
Okeene Hospital	Gen	Indiv	10	2	11	2	50
Oklahoma City 18—Oklahoma	Mat	Church	22	70	16	9	194
Home of Redemptive Love	Mat	Church	22	70	16	9	194
Ryan 1 238—Jefferson	Gen	Indiv	10		72	8	243
Ryan Hospital	Gen	Indiv	10		72	8	243
Stillwater 7 016—Payne	Inst	State	50			6	909
Agriculture and Mechanical College Infirmary	Inst	State	50			6	909
Tahlequah 2 94—Cherokee	Inst	IA	12			2	11
Squoyah Training School	Inst	IA	12			2	11
Tahlequah Hospital	Inst	IA	12			2	11
Watonga 2 228—Blaine	Gen	Indiv	10	1	6	3	0
Watonga Hospital	Gen	Indiv	10	1	6	3	0
Summary for Oklahoma							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	102	12 700	10 288	87 370			
	14	1 192	875	3 981			
Total	116	13 892	11 263	91 351			
Refused registration	18	429					

OREGON

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassinets	Number of Births	Average Patients	Patients Admitted
Albany 5 025—Linn							
Albany General Hospital	Gen	NPA'sen	50	7	96	19	767
Ashland 4 544—Jackson							
Community Hospital	Gen	City	18	3	27	9	413
Astoria 10 349—Clatsop							
Columbia Hospital	Gen	Church	91	12	146	42	1 881
St Mary Hospital	Gen	Church	110	1	72	20	1 321
Baker 7 838—Baker							
Protestant Hospital	Gen	Church	22	4	31	14	400
St Elizabeth Hospital	Gen	Church	22	4	31	14	400
Bend 8 848—Deschutes							
St Charles Hospital	Gen	Church	36	10	106	22	810
Burns 2 599—Harney							
Valley View Hospital	Gen	Indiv	21	3		6	
Corvallis 7 035—Benton							
Corvallis General Hospital	Gen	NPA'sen	40	6	100	17	764
Dallas 2 075—Polk							
Dallas Hospital	Gen	Corp	24	4	36	10	36
Enterprise 1 379—Wallowa							
Enterprise Hospital	Gen	Corp	18	3	12	5	219
Eugene 18 901—Lane							
Pacific Hospital	Gen	NPA'sen	78	18	310	50	1 840
Grants Pass 4 666—Josephine							
Josephine General Hospital	Gen	County	30	6		14	
Hood River 2 777—Hood River							
Hood River Hospital	Gen	NPA'sen	40	6	70	16	700
Klamath Agency 16—Klamath							
Klamath Indian Hospital	Gen	IA	41	2	28	9	316
Klamath Falls 16 093—Klamath							
Hillsdale Hospital	Gen	Corp	50	10	98	26	1 769
Klamath Valley Hospital	Gen	Indiv	56	14	200	20	1 900
Medford 11 007—Jackson							
Sacred Heart Hospital	Gen	Church	70	8	88	32	1 000
Milwaukie 1 767—Clackamas							
Portland Open Air Sanatorium	IB	NPA'sen	40			32	116
Myrtle Point 1 362—Coos							
Mast and Wilson Hospital	Gen	Indiv	18	6	24	17	419
North Bend 4 012—Coos							
Kelzer Brothers Hospital	Gen	Corp	68	10	116	72	1 963
Mercy Hospital	Gen	Church	60	4	46	20	400
Ontario 1 941—Malheur							
Holy Rosary Hospital	Gen	Church	7	5	18	34	728
Oregon City 5 761—Clackamas							
Oregon City Hospital	Gen	Corp	52	8	115	30	916
Pendleton 6 621—Umatilla							
Eastern Oregon State Hosp	Ment	State	1 300			1 714	227
St Anthony's Hospital	Gen	Church	80	12	128	47	1 916
Portland 301 81—Multnomah							
Doernbecher Memorial Hospital for Children	Chil	State	70			48	2 000
Immanuel Hospital	Gen	Church	230	50	889	153	6 109
Good Samaritan Hospital	Gen	Church	310	20	451	164	7 881
Juvenile Hospital for Girls	Gen	NPA'sen	100	8	22	67	96
Morningside Hospital	Ment	Corp	328			30	40
Mountain View Sanatorium	N&M	Indiv	16			12	
Multnomah Hospital	Gen	County	300	30	79	274	1 199
Portland Convalescent Hosp	Conv	Indiv	2			10	199
Portland Medical Hospital	Gen	Corp	64			24	371
Portland Sanitarium and Hospital							
Dr Robert C Coffey Clinic and Hospital	Gen	Church	112	24	391	78	3 778
St Vincent's Hospital	Gen	Corp	100	0	14	31	796
Shriners Hospital for Crippled Children	Gen	Church	366	36	100	304	8 719
Veterans Admin Facility	Orth	Part	0			51	298
Theo B Wilcox Memorial Hospital	Gen	Vet	0			312	2 206
Waverleigh Sanatorium	Obstetrical	Unit of Good Samaritan Hospital					
Roseburg 4 762—Douglas	N&M	Indiv	10			8	106
Mercy Hospital							
Veterans Admin Facility	Gen	Church	70	6	96	20	1 89
St Helens 3 994—Columbia							
St Helens General Hospital	Gen	Vet	191			120	1 118
Salem 26 266—Marion							
Oregon State Hospital	Gen	Indiv	19	6	19	10	527
Oregon State Tuberculosis Hosp	Ment	State	2 476			2 290	728
Salem General Hospital	TB	State	2 476			2 290	728
Silverton 2 462—Marion	Gen	NPA'sen	71	12	110	29	1 306
Silverton Hospital	Gen	NPA'sen	16	6	74	5	29
The Dalles 5 883—Wasco							
Eastern Oregon State Tuberculosis Hospital	Gen	State	100			150	89
Mid Columbia Hospital	Gen	Indiv	2	6	36	11	78
The Dalles Hospital	Gen	Corp	70	10	129	50	1 208
Tillamook 2 49—Tillamook							
Charlton Hospital	Gen	Indiv	30		38	9	88
Toledo 2 177—Lincoln							
Lincoln Hospital	Gen	Corp	22	3	42	10	402
Troutdale 227—Multnomah							
Multnomah County Tuberculosis Pavilion	IB	County	30			38	60
Woodburn 1 67—Marion							
Woodburn Hospital	Gen	Indiv	12	4	54	4	100
Related Institutions							
Bandon 1 316—Coos							
Leep Memorial Hospital	Gen	Indiv	6	2	6	2	
Bend 8 848—Deschutes							
Lumbermen's Hospital	Indu	NPA'sen	20			No data supplied	
Chemawa 62—Marion							
Chemawa Hospital	Inst	IA	40			10	721
Corvallis 7 58—Benton							
Oregon State Agricultural College Hospital	Inst	State	10			9	87

OREGON—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Klamath Falls 16 093—Klamath Soule Sanitarium	Gen	Indiv	12	4	12	5	60
Lakeview 1799—Lake Lakeview Hospital	Gen	Corp	12	4	18	6	453
McMinnville 2 917—Yamhill McMinnville Hospital	Gen	NPA's n	2	6	No data supplied		
Portland 301 815—Multnomah F Henry Wemme White Shield Isolation Hospital	Mat	NPA's n	2	12	34	14	43
Salvation Army White Shield Home	Mat	Church	70	6	24	24	278
Woman's Convalescent Home	Cont	NPA's n	30	5	74	25	107
Salem 26 266—Marion Oregon Fairview Home	Mede	State	1	10	10	10	100
Oregon State Penitentiary Hosp	Inst	State	32			15	300
Oregon State School for the Deaf	Inst	State	11			3	194
Tillamook 2 449—Tillamook Tillamook General Hospital	Gen	Indiv	10	4		4	
Waldport 467—Lincoln Waldport Community Hospital	Cen	Indiv	10	4	8	3	100
Summary for Oregon							
Hospitals and sanatoriums	56		8 472		6 760		68 046
Related institutions	17		13-8		1 059		3 662
Total	73		9 490		7 819		71 408
Refined registration	14		471				

PENNSYLVANIA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Ablington 871—Montgomery Ablington Memorial Hosp. **	Gen	NPA's n	242	33	587	166	4 676
Allentown 97 563—Lehigh Allentown Hospital*	Cen	NPA's n	300	25	521	27	6 708
Allentown State Hospital*	Ment	State	1 544			1 582	502
Baer Hospital	Gen	Indiv	20	10	36	5	148
Sacred Heart Hospital*	Gen	Church	280	20	44	171	1 148
Allenwood 462—Union Devils' Camp for Tuberculosis	TB	NPA's n	104			78	135
Altoona 82 044—Blair Altoona Hospital*	Gen	NPA's n	162	18	312	79	2 011
Mercy Hospital*	Gen	NPA's n	107	16	11	70	2 014
Ambler 3 944—Montgomery Dufur Hospital	N&M	Indiv	50			36	74
Ashland 7 164—Schuylkill Ashland State Hospital*	Gen	State	276	1	401	149	5 089
Alplinsall (Pittsburgh P O) 4 263—Allegheny Veterans Admin Facility	C&TB	Vet	50			471	1 564
Beaver Falls 17 147—Beaver Providence Hospital*	Gen	Church	5	10	117	5	819
Bedford 2 000—Bedford Tintinnus Hospital	Gen	Indiv	17	4	14	8	274
Belleville 4 804—Center Center County Hospital	Cen	NPA's n	64	12	92	4	1 811
Bellevue 10 012—Allegheny Suburban General Hospital*	Cen	NPA's n	104	14	178	41	2 079
Berwick 12 600—Columbia Berwick Hospital	Gen	NPA's n	50	10	116	2	902
Bethlehem 3 882—Northampton St Luke's Hospital*	Gen	NPA's n	110	20	409	143	4 669
Bloomburg 9 092—Columbia Bloomburg Hospital	Gen	NPA's n	110	15	175	18	2 016
Blossburg 1 096—Tioga Blossburg State Hospital	Cen	State	50	8	1	80	1 982
Bradford 19 079—Allegheny Bradford Central Hospital*	Cen	NPA's n	171	16	502	52	1 565
Bradford 19 066—McKeen Bradford Hospital	Gen	NPA's n	10	25	72	64	2 071
Brookville 4 787—Jefferson Brookville Hospital	Cen	NPA's n	36	4	7	2	772
Brownsville 2 509—Fayette Brownsville General Hospital	Gen	NPA's n	90	10	8	4	1 266
Bryn Mawr 2 064—Montgomery Bryn Mawr Hospital*	Gen	NPA's n	258	24	474	125	4 130
Butler 23 568—Butler Butler County Memorial Hospital	Gen	NPA's n	92	10	155	59	1 956
Canonburg 10 888—Washington Canonburg General Hospital*	Gen	NPA's n	56	10	188	36	1 312
Carlisle 20 001—Lackawanna Carlisle General Hospital	Gen	NPA's n	6	11	122	7	1 24
Carlisle 12 066—Cumberland Carlisle Hospital	Gen	NPA's n	106	1	1	45	1 622
Carlisle 12 066—Cumberland Carlisle Hospital	Gen	NPA's n	52	1	24	4	1 488
Chambersburg 10 000—Franklin Chambersburg Hospital	Gen	NPA's n	77	12	150	42	1 146
Chester 10 164—Delaware Chester Hospital	Cen	NPA's n	250	2	591	121	3 575
1 Lewis Crozer Home for Incurable and Homeopathic Hospital	Cen	NPA's n	5	10	191	75	500
Sacred Heart Hospital	Cen	Church	25	6			

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Clark Summit 2 604—Lackawanna Hillside Home and Hospital for Mental Diseases	Ment	City	50			785	209
Clearfield 9 221—Clearfield Clearfield Hospital*	Cen	Corp	112	16	162	63	2 662
Clifton Heights 5 657—Delaware Burn Brae Hospital	N&M	Indiv	50			42	
Coaldale 6 921—Schuylkill Conditale State Hospital	Gen	State	170	1	339	84	1 611
Coatesville 14 582—Chester Coatesville Hospital*	Cen	NPA's n	97	14	178	52	1 714
Coatesville Admin Facility	Ment	Vet	170			1 203	291
Columbia 11 349—Lancaster Columbia Hospital	Gen	NPA's n	65	10	87	17	618
Colver 2 060—Cambria Colver Hospital	Cen	NPA's n	19	4	4	5	21
Confluence 950—Somerset Frantz Hospital	Gen	Indiv	12			1	7 116
Connellsville 13 790—Tayette Connellsville State Hospital	Cen	State	81	15	264	64	2 158
Corry 7 115—Eric Corry Hospital	Gen	NPA's n	40	8	92	1	912
Coudersport 2 740—Potter Coudersport General Hospital	Cen	NPA's n	70			40	17 655
Cresson 2 317—Cambria Pennsylvania State Sanatorium for Tuberculosis No 2	TB	State	520			819	681
Danville 7 185—Montour Danville State Hospital*	Ment	State	1 947			1 866	69
Geo 1 Ceiinger Memorial Hospital**	Cen	NPA's n	102	20	50	121	4 075
Darby 9 897—Delaware FitzGerald Mercy Hospital*	Cen	Church	200	45	452	19	2 000
Diamond 1 200—Allegheny Diamond Hospital	N&M	NPA's n	114			11 6	94
Drexel Hill 1 119—Delaware Delaware County Hospital	Cen	NPA's n	56	14	99	50	1 724
Du Bois 11 595—Clearfield Du Bois Hospital	Cen	Church	50			25	64
Maple Avenue Hospital	Cen	NPA's n	1	8	97	20	1 065
Eagleview 184—Montgomery Eagleview Sanatorium for Consumption**	TB	NPA's n	188			170	188
Easton 34 468—Northampton Betts Private Hospital	Cen	Indiv	40	10	109	20	65
Fauston Hospital*	Cen	NPA's n	199	50	379	149	4 586
Fauston Sanatorium	N&M	Indiv	0			12	57
Fast Stroudsburg 6 099—Monroe General Hospital of Monroe County	Gen	NPA's n	50	9	134	24	1 012
Lizabethtown 3 940—Lancaster Philadelphia Freemasons Memorial Hospital	Cen	Frat	10			157	671
State Hospital for Crippled Children	Orth	State	125			121	148
Ellwood City 12 023—Lawrence Ellwood City Hospital	Gen	NPA's n	50	8	122	37	849
Eric 11 967—Eric Hamot Hospital*	Gen	NPA's n	190	21	60	164	4 841
Louise Home Sanatorium	IB	NPA's n	21			21	4
St Vincent's Hospital*	Cen	Corp	152	5	651	114	5 07
Zem Zem Hospital for Crippled Children	Orth	Frat	50			32	54
Everett 1 874—Bedford Everett Hospital	Cen	Indiv	24	6	42	20	400
Franklin 10 254—Venango Franklin Hospital	Gen	NPA's n	47	10	98	21	507
Gettysburg 5 54—Adams Annie M Warner Hospital	Cen	NPA's n	14	6	103	22	95
Gladwyne 1 936—Montgomery Gladwyne Colony	N&M	Indiv	50			68	77
Greensburg 10 055—Westmoreland Westmoreland Hospital	Cen	NPA's n	155	17	375	91	2 077
Crownville 8 625—Mercer Greenville Hospital	Gen	NPA's n	51	12	56	12	500
Grove City 6 166—Mercer Grove City Hospital	Gen	NPA's n	25	5	41	8	399
Hamburg 3 637—Berks Hamburg State Sanatorium for Tuberculosis	IB	State	540			24	557
Hanover 11 805—York Hanover General Hospital	Gen	NPA's n	55	10	24	50	1 050
Harriburg 80 329—Dauphin Harrisburg Hospital*	Cen	NPA's n	219	2	481	168	5 857
Harriburg Polyclinic Hosp.*	Cen	NPA's n	10			442	87 474
Harriburg State Hospital	Ment	State	158			1 531	1 0
Key tone Ho-plital	Gen	Indiv	25	6	55	27	325
Hazleton 5 676—Luzerne Corrigon Maternity Hospital	Mat	Part	16	16	314	12	70
Hazleton State Hospital	Gen	State	141	14	396	153	5 849
Hollidaysburg 5 949—Blair Blair County Hospital for Mental Diseases	Ment	County	700			256	135
Home tend 20 141—Allegheny Home tend Ho-plital*	Gen	NPA's n	86	20	212	4	1 148
Honesdale 4 490—Wayne Wayne County Memorial Hospital	Gen	NPA's n	29	7	65	12	397
Huntingdon 7 585—Huntingdon J C Blair Memorial Hospital	Gen	NPA's n	70	14	180	4	1 777
Indiana 9 079—Indiana Indiana Hospital	Gen	NPA's n	133	15	137	100	2 440
Jersey Shore 751—Lycoming Jersey Shore Hospital	Gen	NPA's n	29	3		8	
Sanford Ho-plital	Cen	Indiv	29	6	71	10	21

Key to symbols and abbreviations is on page 798

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Johnstown 66 997—Cambria							
Conemaugh Valley Memorial Hospital*	Gen	NPA sn	260 30	486	179	4 974	
Lee Homeopathic Hospital	Gen	NPA sn	54 15	175	37	1 208	
Mendenhall Maternity Hosp	Mat	Indiv	16 16	140	6	160	
Mercy Hospital*	Gen	Church	86 14	288	62	1 742	
Kane 6 232—McKean							
Community Hospital	Gen	NPA sn	54 12	87	38	1 341	
Kane Summit Hospital	Gen	NPA sn	35 6	51	13	540	
Kingston 21 600—Luzerne							
Nesbitt Memorial Hospital*	Gen	NPA sn	118 12	276	65	2 370	
Kittanning 7 808—Armstrong							
Kittanning General Hospital	Gen	NPA sn	35 5	45	20	679	
Lancaster 59 949—Lancaster							
Lancaster General Hospital*	Gen	NPA sn	240 32	606	152	4 793	
Rossmore Sanatorium	TB	Cy Co	55 2	53	125		
St Joseph's Hospital*	Gen	Church	165 26	346	88	2 871	
Latrobe 10 644—Westmoreland							
Latrobe Hospital*	Gen	NPA sn	65 10	201	34	1 416	
Lebanon 25 561—Lebanon							
Good Samaritan Hospital*	Gen	NPA sn	100 20	215	61	1 640	
Lebanon Sanatorium	Gen	NPA sn	30 6	43	12	428	
Lewisburg 3 308—Union							
Evangelical Hospital	Gen	Church	24 6	68	9	396	
U S Public Health Service Hospital	Gen	USPHS	80		54	1 367	
Lewistown 13 357—Mifflin							
Lewistown Hospital*	Gen	NPA sn	86 7	108	68	2 016	
Lock Haven 9 668—Clinton							
Lock Haven Hospital	Gen	NPA sn	78 10	185	41	1 401	
Teah Private Hospital	Gen	Indiv	25 6	22	8	247	
Lock No 4 618—Washington							
Charlottesville Memorial Hospital	Gen	Corp	81 12	125	46	1 149	
Mayview 47—Allegheny							
Pittsburgh City Home and Hospitals	Gen	N&M City	930 8	15	931	1 285	
McKeesport 54 632—Allegheny							
McKeesport Hospital*	Gen	NPA sn	223 40	654	152	3 427	
McKees Rocks 18 116—Allegheny							
Ohio Valley General Hospital*	Gen	NPA sn	50 17	205	30	1 244	
Meadville 16 698—Crawford							
Meadville City Hospital*	Gen	NPA sn	79 14	155	48	1 444	
Spencer Hospital*	Gen	NPA sn	107 13	246	58	2 098	
Media 5 372—Delaware							
Media Hospital	Gen	Indiv	25 4	11	8	197	
Mercer 2 125—Mercer							
Mercer Cottage Hospital	Gen	Corp	40 3	35	25	1 100	
Mercer Sanatorium	N&M	Corp	45		35	125	
Meyersdale 3 065—Somerset							
Hazel McGilvery Hospital	Gen	Indiv	12 5	31	5	286	
Meyersdale Wenzel Hospital	Gen	Indiv	13 2	4	3	126	
Monaca 4 641—Beaver							
Beaver County Sanatorium	TB	County	63		63	92	
Monessee 20 268—Westmoreland							
Gemmill Hospital	ENT	Indiv	12		3	424	
Monongahela 8 675—Washington							
Memorial Hospital	Gen	NPA sn	66 6	82	21	640	
Mt Pleasant 5 869—Westmoreland							
Henry Clay Frick Memorial Hospital	Gen	NPA sn	60 10	146	35	1 300	
Muncy 2 413—Lycoming							
Muncy Valley Private Hospital	Gen	NPA sn	20 7	40	6	362	
Nanticoke 26 045—Luzerne							
Nanticoke State Hospital	Gen	State	130 10	120	92	2 644	
New Brighton 9 850—Beaver							
Beaver Valley General Hosp*	Gen	NPA sn	70 10	221	33	957	
New Castle 48 674—Lawrence							
Jameson Memorial Hospital*	Gen	NPA sn	139 21	257	80	2 320	
New Castle Hospital*	Gen	Church	105 20	231	68	2 135	
New Kensington 16 762—Westmoreland							
Citizens General Hospital*	Gen	NPA sn	88 12	192	74	2 084	
Norristown 35 855—Montgomery							
Montgomery Hospital*	Gen	NPA sn	90 20	320	75	2 692	
Norristown State Hospital*	Gen	State	3 548		3 407	7 006	
Riverview Hospital	Gen	NPA sn	35 10	185	17	612	
Northampton 9 839—Northampton							
Haff Hospital	Gen	Indiv	32 3	17	15	377	
Oil City 22 075—Venango							
Grand View Sanatorium	TB	NPA sn	50		12	27	
Oil City General Hospital*	Gen	NPA sn	77 18	261	47	1 450	
Palmerton 7 678—Carbon							
Palmerton Hospital*	Gen	NPA sn	65 10	104	46	1 721	
Peckville 3 915—Lackawanna							
Mid Valley Hospital	Gen	NPA sn	62 8	250	56	1 891	
Philadelphia 1 50 961—Philadelphia							
American Hospital for Diseases of the Stomach	Gen	NPA sn	39 3	48	17	781	
American Oncologic Hospital	SKCa	NPA sn	45		22	451	
Anderson Hospital	Gen	Corp	72 24	142	17	1 549	
Broad Street Hospital	Gen	NPA sn	80 30	260	70	1 113	
Chestnut Hill Hospital*	Gen	NPA sn	89 25	324	60	1 891	
Children's Heart Hospital	Card	NPA sn	50		25	331	
Children's Hospital*	Chil	NPA sn	120		95	2 106	
Children's Hospital of the Mary J Drexel Home*	Chil	Church	53		21	861	
Fairmount Farm	N&M	Corp	44		25	177	
Frankford Hospital*	Gen	NPA sn	119 27	412	86	2 943	
Frederick Douglass Memorial Hospital (col)	Gen	NPA sn	61 6	37	32	544	
Friends Hospital*	N&M	Corp	190		125	93	
Garretson Hospital	Unit of Temple	University Hospital					
Germantown Dispensary and Hospital*	Gen	NPA sn	310 50	1 262	246	7 147	
Graduate Hospital of the University of Pennsylvania**	Gen	NPA sn	475		8 225	7 287	

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Hahnemann Hospital*	Gen	NPA sn	498 94	1 784	385 11 935	142	
Home for Consumptives	TB	Church	104				
Hospital of the Protestant Episcopal Church*	Gen	Church	488 42	278	296	4 651	
Hospital of the University of Pennsylvania**	Gen	State	566 32	746	360	9 117	
Hospital of the Woman's Medical College of Pennsylvania*	Gen	NPA sn	152 21	521	80	3 024	
Institute of the Pennsylvania Hospital	N&M	NPA sn	60		24	369	
Jefferies Hospital*	Ca	NPA sn	65		53	480	
Jefferson Medical College Hos							
Jefferies Hospital*	Gen	NPA sn	631 57	1 080	489	12 869	
Jewish Hospital**	Gen	NPA sn	352 70	994	248	6 991	
Joseph Price Memorial Hosp	Gen	NPA sn	60 10	118	38	609	
Kensington Hospital for Women	GynMat	NPA sn	66 35	979	48	1 391	
Lankenau Hospital*	Gen	NPA sn	258 35	408	187	4 473	
Memorial Hospital	Gen	NPA sn	75 10	250	56	1 806	
Mercy Hospital (col)*	Gen	NPA sn	100 10	182	70	1 721	
Methodist Episcopal Hosp*	Gen	Church	197 45	515	125	3 175	
Metropolitan Hospital	Gen	Corp	20 6	119	8	599	
Misericordia Hospital*	Gen	Church	195 35	775	183	4 164	
Mt Sinai Hospital*	Gen	NPA sn	261 55	997	187	6 433	
National Stomach Hospital	Gen	NPA sn	44		14	419	
Northeastern Hospital*	Gen	NPA sn	87 15	491	57	2 125	
Northern Liberties Hospital	Gen	NPA sn	53 11	67	36	1 589	
Northwestern General Hospital	Unit of Temple	University Hospital					
Pennsylvania Hospital**	Gen	NPA sn	430 130	2 294	350	10 581	
Pennsylvania Hospital Depart							
ment for Mental and Nervous Diseases*	N&M	NPA sn	225		173	230	
Philadelphia General Hosp**	Gen	City	2 500	60	1 572	2 124	27 042
Philadelphia Hospital for Con							
tagious Diseases	Iso	City	1 100		260	3 237	
Philadelphia Hospital for Men							
tal Diseases	N&M	City	6 156		5 758	1 376	
Philadelphia Orthopaedic Hos							
pital and Infirmary for Ner	Orth	N&M	140		62	498	
vous Diseases*	Gen	Church	383	42	550	198	4 456
Presbyterian Hospital**	Mat	NPA sn	50 35	444	28	441	
Preston Retreat							
Rush Hospital for Consump	TB	NPA sn	168		96	455	
tion and Allied Diseases	Gen	Church	336 60	1 066	230	4 009	
St Agnes Hospital*	Chil	NPA sn	75		55	2 202	
St Christopher's Hospital for	Gen	Church	150 20	345	89	2 162	
Children*							
St Joseph's Hospital*	Gen	NPA sn	176 40	650	145	3 953	
St Luke's and Children's Hos	Gen	Church	237 41	766	125	3 854	
pital*	Gen	Church	176 33	376	50	609	
St Mary's Hospital*							
St Vincent's Hospital	Gen	Church	176 33	376	50	609	
Shriners Hospital for Crippled							
Children	Orth	Frat	100		96		
Skin and Cancer Hospital*	SKCa	NPA sn	23		19	168	
Stetson Hospital	Gen	NPA sn	62 10	106	28	1 980	
Temple University Hospital*	Gen	NPA sn	402 54	932	313	8 428	
U S Naval Hospital	Gen	Navy	650		294	2 964	
Urologic Clinic	Urol	Part	15		5	163	
Wills Hospital*	Eye	NPA sn	200		107	3 167	
Woman's Hospital*	Gen	NPA sn	109 41	776	68	2 367	
Women's Homeopathic Hosp*	Gen	NPA sn	160 40	324	80	2 863	
Philipsburg 3 600—Centre							
Dr McGirk Sanitarium	Gen	Indiv	20 6	19	2	155	
Philipsburg State Hospital*	Gen	State	104 12	273	96	2 331	
Phoenixville 12 029—Chester							
Phoenixville Hospital	Gen	NPA sn	58 9	124	31	901	
Pittsburgh 669 817—Allegheny							
Allegheny General Hospital**	Gen	NPA sn	378 27	530	252	5 781	
Belvedere General Hospital	Gen	NPA sn	30 6	56	9	351	
Children's Hospital*	Chil	NPA sn	196		111	2 674	
Elizabeth Steel Magee Hosp*	Gen	NPA sn	304 19	2 339	183	4 943	
Eye and Ear Hospital*	ENT	NPA sn	95 61	45	3 811		
Haddon Maternity Hospital	Mat	Corp	20 15	149	9	387	
Homeopathic Medical and Sur							
gical Hospital and Dispensary*	Gen	NPA sn	280 45	621	145	3 951	
Leech Farm Sanatorium	TB	City	280		249	359	
Mercy Hospital**	Gen	Church	622 48	494	495	10 190	
Montefiore Hospital*	Gen	NPA sn	194 31	702	150	5 659	
Municipal Hospital for Conta							
gious Diseases	City	Iso	250		60	1 004	
Passavant Hospital*	Gen	Church	116 24	236	63	2 016	
Pittsburgh Hospital*	Gen	NPA sn	176 24	507	141	3 419	
Presbyterian Hospital*	Gen	NPA sn	160 5	27	89	2 334	
Rosella Foundling and Mater							
nity Hospital	MatCh	NPA sn	185 22	215	111	400	
St Francis Hospital**	Gen	Church	540 37	507	307	6 839	
St John's General Hospital*	Gen	Church	180 22	445	92	2 773	
St Joseph's Hospital and Dis							
pensary*	Gen	Church	128 12	203	76	1 855	
St Margaret Memorial Hosp*	Gen	Church	129 21	224	60	2 082	
South Side Hospital*	Gen	NPA sn	207 18	348	121	4 126	
Tuberculosis League Hospital	TB	NPA sn	150		142	198	
U S Marine Hospital	Gen	USPHS	73		61	680	
Western Pennsylvania Hos p**	Gen	NPA sn	600 51	1 269	359	8 365	
Pittston 18 246—Luzerne							
Pittston Hospital*	Gen	NPA sn	110 12	237	78	3 538	
Pottstown 19 040—Montgomery							
Homeopathic Hospital	Gen	NPA sn	50 10	78	16	114	
Pottstown Hospital*	Gen	NPA sn	64 11	154	39	1 298	
Pottsville 24 300—Schuylkill							
Lemos B Warner Hospital	Gen	Indiv	78 12	88	31	1 171	
A C Milliken Hospital	Gen	NPA sn	46 10	129	24	1 042	
Pottsville Hospital*	Gen	NPA sn	128 12	225	89	2 183	

Key to symbols and abbreviations is on page 798

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basements	Number of Births	Average Patients	Patients Admitted
Punxsutawney 9268—Jefferson Hospital	Gen	NPA's n	78	12	133	47	1 547
Quakertown 4889—Bucks Quakertown Hospital	Gen	NPA's n	44	12	103	23	703
Ransom 57—Lackawanna Ransom Home and Mental Hospital	N&M	County	350			372	63
Reading 111 171—Berks Berks County Tuberculosis Sanatorium	TB	County	134			133	100
Homeopathic Medical and Surgical Hospital*	Gen	NPA's n	99	10	300	50	2 070
Reading Hospital*	Gen	NPA's n	230	33	642	158	4 678
St Joseph's Hospital*	Gen	Church	180	20	574	140	3 016
Renovo 3 947—Clinton Renovo Hospital	Gen	NPA's n	30	6	50	12	409
Retreat 31—Luzerne Retreat Mental Hospital	N&M	County	1 000			902	189
Ridgway 6 313—Elk Elk County General Hospital	Gen	NPA's n	60	9	118	30	1 143
Ridley Park 3 356—Delaware Taylor Hospital	Gen	NPA's n	67	9	238	27	1 272
Roaring Spring 2 724—Blair Anson Hospital	Gen	NPA's n	56	6		24	
Rochester, 7 726—Beaver Rochester General Hospital	Gen	NPA's n	100	12	200	62	1 866
St Mary's 7 433—Elk Andrew Kaul Memorial Hosp	Gen	NPA's n	40	12	109	20	748
Sayre 7 902—Bradford Robert Packer Hospital*	Gen	NPA's n	300	20	371	204	6 420
Schuylkill Haven 6 514—Schuylkill Schuylkill County Hospital for Mental Diseases	Ment	County	430			524	159
Scranton 143 433—Lackawanna Hahnemann Hospital*	Gen	NPA's n	100	16	376	87	2 503
Lackawanna County Tuberculosis Hospital	TB	County	140			137	201
Mercy Hospital*	Gen	Church	84	20	390	54	1 908
Moses Taylor Hospital*	Gen	NPA's n	96	4		66	1 640
St Joseph's Children's and Maternity Hospital*	MatCh	Church	180	24	31	95	202
St Mary's Keller Memorial Hospital*	Gen	Church	68	12	200	40	1 091
Scranton Private Hospital	Gen	Corp	40	6	11	12	917
Scranton State Hospital*	Gen	State	174	14	302	190	3 303
West Side Hospital*	Gen	NPA's n	50	10	297	66	1 700
Sellersville 2 063—Bucks Grand View Hospital*	Gen	NPA's n	58	7	100	20	797
Sewickley 5 559—Allegheny Valley Hospital*	Gen	NPA's n	113	7	243	80	1 978
Shamokin 20 974—Northumberland Shamokin State Hospital	Gen	State	88	8	132	90	3 100
Sharon 2 908—Mercer Christian H. Buhl Hospital*	Gen	NPA's n	107	17	298	70	2 269
Shenandoah 21 782—Schuylkill Locust Mountain State Hosp	Gen	State	71	10	180	58	1 731
Somer 4 380—Somerset Somerset Community Hospital	Gen	NPA's n	30	6			No data supplied
South Mountain 20—Franklin Pennsylvania State Sanatorium for Tuberculosis	TB	State	1 030			1 037	1 476
Spangler 2 761—Cambria Miners Hospital of Northern Cambria	Gen	NPA's n	60	10	76	61	1 423
Sunbury 11 626—Northumberland Mary M. Packer Hospital	Gen	NPA's n	61	9	192	42	1 843
Susquehanna 3 903—Susquehanna Simon H. Barnes Memorial Hospital	Gen	NPA's n	16	5	30	9	237
Tarentum 9 501—Allegheny Allegheny Valley Hospital*	Gen	NPA's n	50	10	189	60	1 841
Taylor 10 423—Lackawanna Taylor Hospital	Gen	NPA's n	41	7	131	34	1 397
Titusville 8 000—Crawford Titusville Hospital	Gen	NPA's n	42	8	143	19	861
Torrance 414—Westmoreland Torrance State Hospital	Ment	State	1 516			1 601	634
Uniontown 19 44—Fayette Uniontown Hospital*	Gen	NPA's n	200	20	260	140	4 183
Warren 14 803—Warren Warren General Hospital*	Gen	NPA's n	50	22	266	50	2 002
Warren State Hospital*	Ment	State	2 063			2 049	610
Washington 24 540—Washington Hillview Farms Sanitarium	Gen	Indiv	50		3	34	212
Washington Ho pital*	Gen	NPA's n	138	28	229	84	2 600
Waymart 909—Wayne Fairview State Hospital	Ment	State	810			762	103
Waynesboro 10 167—Franklin Waynesboro Ho pital	Gen	NPA's n	36	10	134	23	762
Waynesburg 4 910—Greene Greene County Memorial Ho p	Gen	NPA's n	34	6	58	17	780
Wernersville 1 006—Berks Wernersville State Ho pital	Ment	State	1 466			1 400	301
West Chester 10 000—Chester Chester County Ho pital*	Gen	NPA's n	130	22	370	77	2 006
Homeopathic Ho pital of Chester County*	Gen	NPA's n	67	10	178	40	1 364
West Grove 1000—Chester West Grove Ho pital	Gen	Indiv	20	12	70	11	337
White Haven 1 037—Luzerne White Haven Sanatorium*	TB	NPA's n	200			220	402
Wilkes Barre 4000—Luzerne Mercy Ho pital*	Gen	Church	100	20	400	120	3 000
Wilkes Barre General Hosp*	Gen	NPA's n	200	41	678	225	7 418
Wyoming Valley Homeopathic Ho pital*	Gen	NPA's n	76	20	270	54	1 720

PENNSYLVANIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basements	Number of Births	Average Patients	Patients Admitted
Wilkesburg 29 539—Allegheny Columbia Hospital*	Gen	Church	187	26	468	92	2 567
Williamsport 40 729—Lycoming Rothfuss Clinic and Hospital	Gen	Indiv	22	6	41	5	304
Williamsport Hospital*	Gen	NPA's n	231	44	506	115	4 383
Windber 9 200—Somerset Windber Hospital*	Gen	NPA's n	107	10	238	81	2 512
Woodville 510—Allegheny Allegheny County Home and Hospital for the Insane	Ment	County	2 025			3 062	1 322
York 50 204—York West Side Sanitarium	Gen	Indiv	40	8	37	20	807
York Hospital*	Gen	NPA's n	192	20	593	139	3 716
Related Institutions							
Ardmore 10 070—Montgomery Wood Lea Sanitarium	N&M	Indiv	14				8
Bellevue 10 200—Allegheny Salvation Army Woman's Home and Hospital	Mat	Church	10	10	61	15	93
Broomall 120—Delaware Convalescent Hospital	Conv	Frat	30			23	304
Bryn Mawr 3 000—Montgomery Bryn Mawr College Infirmary	In t	NPA's n	16			2	226
Chester 59 164—Delaware Mercy Hospital	Gen	Indiv	20			8	
Clifton Heights 50 007—Delaware Fyrie Sanitarium	N&M	Indiv	12			No data supplied	
Darby 9 899—Delaware St. Francis Country House for Convalescents and St. Francis Hall for Incurables	ConvInc	Church	50			44	300
Devon 304—Chester Alchud Hospital	N&M	Part	20			18	21
Ebensburg 3 063—Cambria Cambria County Hospital	Inst	County	89	2		83	100
Elwyn 100—Delaware Elwyn Training School	MeDe	NPA's n	104			970	52
Embsville 147—Chester Chester County Hospital for Insane	Ment	County	310			310	57
Erie 11 967—Erie Lakeview Hospital	Is0	City	84				200
Rose Memorial Private Hospital and Clinic	Gen	Indiv	10	4		2	60
Gibsonia 138—Allegheny St. Barnabas Free Home	Inc	Church	100			100	68
Girard 1 504—Erie Erie County Home Tuberculosis Annex	TB	County	32			23	
Harmarville 786—Allegheny Harmarville Convalescent Home	Conv	NPA's n	40	20		52	304
Hershey 2 025—Dauphin Hershey Hospital	Gen	Corp	19	6	123	7	334
Huntingdon 7 000—Huntingdon Pennsylvania Industrial School	Inst	State	36			11	307
Johnstown 66 993—Cambria Municipal Hospital	Is0	City	60	10		8	60
Salus Private Hospital	Alcoh	Indiv	13			2	10
Lancaster 9 949—Lancaster Lancaster County Ho pital and Hospital for Insane	Ment	County	408			390	266
Lansdowne 9 547—Delaware Sanatorium School	Orth	Indiv	30			19	18
Laurelton 327—Union Laurelton State Village	MeDe	State	683			615	30
Louisville 400—Perry Annie L. Lowry Memorial Hospital	In t	Church	24				38
Media 10 372—Delaware Brookwood Farm	N&M	Indiv	16			6	6
Mercer 2 100—Mercer Mercer County Home and Hospital	Ment	County	340			370	112
Middletown 6 000—Dauphin Odd Fellows Home	Inst	Frat	30			30	90
Mont Clare 900—Montgomery River Crest Preventorium	TB	NPA's n	100			80	350
Morganza—Washington Pennsylvania Training School	Inst	State	21			4	504
Newtown Square 168—Delaware Dunwoody Home	Conv	NPA's n	40			39	542
New Wilmington 907—Lawrence Overlook Sanitarium	Conv	Part	30			10	200
North East 1 670—Erie St. Barnabas Home by the Lake	Inc	Church	30			30	14
Oakbourne (West Chester P. O.) 37—Chester James C. Smith Memorial Home	Conv	Church	22			20	382
Pennsylvania Epileptic Hospital and Colony Farm	EpiL	NPA's n	117			117	6
Olyphant 10 743—Lackawanna Blakely Home	Ment	County	144			123	13
Pennhurst—Chester Pennhurst State School	MeDe	State	1 746			1 730	86
Philadelphia 19 000—Philadelphia Babies Hospital	Chil	NPA's n	15			10	237
Belmont Hospital Salvation Army Home and Ho pital	Mat	Church	10	10	103	5	146
Chester Avenue Private Hosp	Gen	Indiv	9	8		2	
Eastern State Penitentiary	Inst	State	60			55	1 043
Florence Crittenton Home	Mat	NPA's n	15	10	32	11	23
Home of the Merciful Saviour for Crippled Children	Orth	NPA's n	62			62	9

PENNSYLVANIA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Homewood School	Inst	NPA ssn	12	10	136	75	
House of the Good Shepherd (col)	Inst	Church	7		71	54	
Homewood Sanitarium	Conv	Corp	40		29	74	
Jogan Private Hospital	Conv	Indiv	14		No data supplied		
Pennsylvania School for the Deaf	Inst	NPA ssn	22		8	280	
Philadelphia County Prison Hospital (Holmesburg)	Inst	Co Co	60		68	336	
Philadelphia County Prison Hospital (Reed St Prison)	Inst	County	31		6	518	
Philadelphia Home for Incurables	Inc	NPA ssn	200		195	34	
Roseneath Farms Sanitarium	Conv	Corp	22		1		
Sharon Hall	Conv	Corp	40		3		
Widener Memorial Industrial Training School for Crippled Children	Orth	NPA ssn	100		7	10	
Pittsburgh 669 817—Allegheny Fairview Sanatorium	Ment	Corp	12		6	7	
Industrial Home for Crippled Children	Orth	NPA ssn	28		22	243	
Jewish Home for the Aged	Inst	NPA ssn				31	
Western Penitentiary Hospital	Inst	State	27		21	345	
Polk 337—Venango							
Polk State School+	McDe	State	1,000		187	19	
Pottstown 19430—Montgomery Hill School Infirmary	Inst	NPA ssn	29		6	510	
Retreat 31—Luzerne							
Retreat Home and Hospital for Chronic Diseases	Inst	County	700		531	248	
Rochester 7726—Beaver							
Pasavant Memorial Homes for the Care of Epileptics	Epil	Church	170		11		
Schuylkill Haven 6514—Schuylkill Schuylkill County Almshouse Hospital	Inst	County	16	12	80		
Seranton 1474—Lackawanna Municipal Hospital for Contagious Diseases	Iso	City	40		10	73	
Sellingrove 2797—Snyder							
Sellingrove State Colony for Epileptics	Epil	State	464		429	8	
Somerset 430—Somerset Somerset County Home and Hospital	Ment	County	341		457	26	
State College 4440—Centre Pennsylvania State College Health Service Hospital	Inst	State	29		4	474	
Towanda 4104—Bradford Mills Private Hospital	Gen	Indiv	18	10	87	12	300
Troy 1190—Bradford Martha Lloyd School	McDe	Indiv	68		68	10	
Valencia 70—Butler Lillian Convalescent Rest	Conv	NPA ssn	2		44	76	
Wilkes Barre 6626—Luzeine Contagious Disease Hospital	Iso	City	12	4	5	120	
Williamstown 2948—Dauphin Williams Valley Hospital	Gen	Corp	24	2	2	2	
Willow Grove 200—Montgomery Willow Crest for Convalescents	Conv	NPA ssn	50		70	996	
Summary for Pennsylvania							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institution	288	68,749	5,207	382,685			
	72	12,220	11,016	1,219			
Totals	60	9,969	6,222	39,904			
Refused registration	21	471					

RHODE ISLAND

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Central Falls 2089—Providence Notre Dame Hospital	Gen	NPA ssn	50	9	81	19	1,015
East Greenwich 3686—Kent Crawford Allen Memorial Hosp	Unit of Rhode Island Hosp	Providence					
East Providence 2997—Providence Emma Pendleton Bradley Home	Nerv Ch	NPA ssn	50		47	33	
Hill Grove 1000—Kent St Joseph's Sanatorium	TB	Church	6		42	2	
Howard 2250—Providence State Hospital for Mental Diseases	Ment	State	2,749		2	22	50
State Infirmary	Gen	State	1,023	61	2	912	739
Newport 27612—Newport Newport Hospital	Gen	NPA ssn	140	21	202	101	2,685
Station Hospital	Gen	Army	44			24	84
U S Naval Hospital	Gen	Navy	161		26	74	632
Pawtucket 77149—Providence Memorial Hospital	Gen	NPA ssn	166	30	478	125	2,977
Providence 232951—Providence Butler Hospital	N&M	NPA ssn	174		140	19	
Charles V Chapin Hospital	Tbl	City	266		207	2	53
Homeopathic Hospital	Gen	NPA ssn	166	34	701	104	63
Jane Brown Memorial Hospital	Unit of Rhode Island Hosp						
Miriam Hospital	Gen	NPA ssn	6	14	221	29	1,74

RHODE ISLAND—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Providence Lying In Hospital	Mat	NPA ssn	1,551	2	2,893	188	2,090
Rhode Island Hospital	Gen	NPA ssn	600			440	10,301
St Joseph's Hospital	Gen	Church	307	43	384	175	4,099
Wakefield 2716—Washington South County Hospital	Gen	NPA ssn	3	10	136	90	650
Wallum Lake 7—Providence Rhode Island State Sanatorium	TB	State	435			394	329
Westerly 10997—Washington Margaret Edward Anderson Hospital	Gen	Indiv	2		No data supplied		
Westerly Hospital	Gen	NPA ssn	61	12	19	24	129
Woonsocket 49376—Providence Woonsocket Hospital	Gen	NPA ssn	137	23	244	67	1,946
Related Institutions							
Bristol 11933—Bristol Rhode Island Soldiers Home	Inst	State	50			38	40
Howard 2250—Providence Rhode Island State Prison	Inst	State	24			18	250
Sockanoset School for Boys	Inst	State	9			3	250
Hoxsie 79—Kent Lakeside Home and Mary Murray Preventorium	TB	NPA ssn	68			3	206
La Fayette 700—Washington Dexter School	McDe	State	546		608	37	
Providence 232981—Providence Broadway Hospital	Surg	Corp	11			2	16
Heath Sanatorium	Conv	Indiv	20			12	16
Heath Sanatorium Annex	Conv	Indiv	14			10	17
St Elizabeth Home for Incurables	Inc	Church	45			42	11
Summary for Rhode Island							
Hospital and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	21	6,482	5,341	36,125			
	9	787	782	1,065			
Totals	0	7,269	6,123	37,190			
Refused registration	1	60					

SOUTH CAROLINA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Abbeville 4414—Abbeville Abbeville County Memorial Hospital	Gen	NPA ssn	25	2	36	7	309
Aiken 6093—Aiken Aiken County Hospital	Gen	County	30	2	46	23	1,287
Anderson 14383—Anderson Anderson County Hospital	Gen	NPA ssn	65	10	275	5	2,32
Bennettsville 3667—Marlboro Marlboro County General Hosp	Gen	NPA ssn	34	6	82	22	967
Camden 518—Kershaw Camden Hospital	Gen	NPA ssn	37	10	68	30	1,11
Charleston 6226—Charleston Baker Sanatorium	Gen	NPA ssn	50	10	117	30	1,06
Roper Hospital	Gen	NPA ssn	295	30	726	255	6,098
St Francis Xavier Infirmary	Gen	Church	50	17	99	26	682
Chester 52—Chester Pryor Hospital	Gen	NPA ssn	60	6	41	20	908
Clinton 5643—Laurens Dr Hays Hospital	Gen	Indiv	15	3	16	5	215
Columbia 11581—Richland Columbia Hospital	Gen	County	275	30	357	155	1,002
Good Samaritan Hosp (col)	Gen	NPA ssn	65	5	No data supplied		
South Carolina Baptist Hosp	Gen	Church	97	6	100	67	2,396
South Carolina State Hosp	Ment	State	2,903			3,490	914
Veterans Admin Facility	Gen	Vet	304			286	2,098
Waverly Sanitarium	N&M	Corp	35			70	73
Waverly Fraternal Hosp (col)	Gen	Frat	62	6	24	70	361
Conway 3011—Horry Conway Hospital	Gen	NPA ssn	37	7	184	22	1,457
Florence 14774—Florence Florence Darlington Tuberculo	TB	County	46			44	60
McLeod Infirmary	Gen	NPA ssn	175	8	191	120	4,111
Saunders Memorial Hospital	Gen	NPA ssn	55	6	47	37	1,500
Gaffney 6827—Cherokee City Hospital	Gen	NPA ssn	35		2	No data supplied	
Greenville 29154—Greenville Greenville City Hospital	Gen	City	188	12	224	123	4,25
Greenville County Sanatorium	TB	County	70			68	12
Dr Jervey's Private Hospital	FNT	Indiv	15			3	230
St Francis Hospital	Gen	Church	96	14	231	56	1,811
Shriners Hospital for Crippled Children	Orth	Frat	60			61	238
Working Benevolent Hosp (col)	Gen	Frat	22	1	22	10	721
Greenwood 11070—Greenwood Brewer Hospital (col)	Gen	Church	2	2	10	14	428
Greenwood Hospital	Gen	NPA ssn	52	5	60	23	1,033
King tree 2392—Williamsburg Kelley Sanatorium	Gen	Indiv	2	4		7	
Lake City 1942—Florence Lynch Infirmary	Gen	Indiv	10	1		3	70
Lancaster 354—Lancaster Lancaster Hospital	Gen	Indiv	25	4	10	8	200
Moncks Corner 623—Berkeley Berkeley County Hospital	G&T	NPA ssn	52	6	27	24	311

Key to symbols and abbreviations is on page 798

SOUTH CAROLINA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Moultrieville 310—Charleston Station Hospital	Gen	Army	50		11	181	
Mullins 318—Marion	Gen	NPA's'n	35	8	61	29	1,337
Navy Yard 140—Charleston	TB	County	60		54	53	
Newberry 728—Newberry	Gen	NPA's'n	21	3	39	14	617
Newberry County Hospital	Gen	NPA's'n	21	3	39	14	617
Orangeburg 877—Orangeburg	Gen	NPA's'n	57	4	17	27	1,034
Tricounty Hospital	Gen	NPA's'n	57	4	17	27	1,034
Parris Island 30—Beaufort	Gen	Navy	111	4	12	43	534
US Naval Hospital	Gen	Navy	111	4	12	43	534
Ridgewood (Columbia P O)—Richland	TB	NPA's'n	70		40	60	
Ridgewood Tuberculosis Camp	TB	NPA's'n	70		40	60	
Rock Hill 1122—York	Gen	Church	6	0	New		
St. Philips Mercy Hospital	Gen	Church	6	0	New		
Six Mile 150—Pickens	Gen	Indiv	22	2	22	24	672
Dr. Peck's Hospital	Gen	Indiv	22	2	22	24	672
Spartanburg 2872—Spartanburg	Gen	NPA's'n	37	2	27	23	1,117
Mary Black Memorial Hosp	Gen	NPA's'n	284	20	36	17	4,463
Spartanburg General Hosp	Gen	NPA's'n	284	20	36	17	4,463
State Park—Richland	Unit of South Carolina Sanatorium	TB	276		26	37	
Palmetto Sanatorium (col)	Unit of South Carolina Sanatorium	TB	276		26	37	
South Carolina Sanatorium	Unit of South Carolina Sanatorium	TB	276		26	37	
Sumter 1178—Sumter	Gen	NPA's'n	92	8	134	61	1,901
Tuomey Hospital	Gen	NPA's'n	92	8	134	61	1,901
Walterboro 250—Colleton	Gen	Indiv	31	4	38	17	1,001
Charles Es Dorn Hospital	Gen	Indiv	31	4	38	17	1,001

Related Institutions

Charleston 676—Charleston	Inst	City	24			476	
Charleston Orphan House	Inst	City	32			10	2,010
Citadel Hospital	Inst	City	32			10	2,010
Clinton 5643—Laurens	Inst	City	40			9	220
Leh Infirmary of Thornwell	Inst	City	518			24	57
Orphanage	Inst	City	40			9	220
State Training School	Inst	City	518			24	57
Georgetown 5082—Georgetown	Gen	Indiv	15	1	3	4	40
Florence Williams Hosp (col)	Gen	Indiv	15	1	3	4	40
Greenville 2914—Greenville	Inst	NPA's'n	43			3	350
Webb Memorial Infirmary	Inst	NPA's'n	43			3	350
Leesville 1340—Lexington	Gen	Corp	30	6		8	
Leesville Infirmary	Gen	Corp	30	6		8	
Summerville 2570—Dorchester	Gen	NPA's'n	12	2	19	7	170
Arthur B Lee Hospital (col)	Gen	NPA's'n	12	2	19	7	170
Summerville Infirmary	Gen	NPA's'n	12	2	19	7	170
Sumter 1178—Sumter	Gen	NPA's'n	10	5	29	9	313
Camp Alice Sumter County	TB	Co Co	26			22	56
Tuberculosis Sanatorium	TB	Co Co	26			22	56
Union 7419—Union	Gen	City	20	2	21	11	359
Wallace Thomson Hospital	Gen	City	20	2	21	11	359

Summary for South Carolina

Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted
Related institutions	48	6,610	564	50,014
Totals	12	1,000	60	4,338
Refused registration	60	7,900	642	67,342

SOUTH DAKOTA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Aberdeen 1646—Brown	Gen	Church	70	9	4	9	388
Aberdeen Good Samaritan Hosp	Gen	Church	12	2	26	56	2,853
St. Luke's Hospital	Gen	Church	12	2	26	56	2,853
Belle Fourche 2092—Butte	Gen	NPA's'n	24	8	69	10	253
John Burns Memorial Hospital	Gen	NPA's'n	24	8	69	10	253
Bowdle 773—Lund	Gen	NPA's'n	10	1	2	4	120
Community Hospital	Gen	NPA's'n	10	1	2	4	120
Brookings 4776—Brookings	Gen	Church	24	8	77	12	630
Wiley Hospital	Gen	Church	24	8	77	12	630
Canova 704—Miner	Gen	Corp	17	3	20	5	310
Canova Hospital	Gen	Corp	17	3	20	5	310
Chamberlain 164—Brule	Gen	NPA's'n	87	6	72	29	973
Chamberlain Sanitarium and Hospital	Gen	NPA's'n	87	6	72	29	973
Cheyenne Agency 121—Dewey	Gen	IA	40	6	7	70	682
Cheyenne River Indian Hosp	Gen	IA	40	6	7	70	682
Deadwood 27—Lawrence	Gen	Church	48	6	12	34	1,005
St. Joseph's Hospital	Gen	Church	48	6	12	34	1,005
Dell Rapids 106—Minnehaha	Gen	Corp	30	6	72	11	210
Dell Rapids Hospital	Gen	Corp	30	6	72	11	210
Foremont 1103—Fall River	Gen	Indiv	9	12	28	3	190
Foremont Hospital	Gen	Indiv	9	12	28	3	190
Foreman 18—Melcher	Gen	NPA's'n	20	4	20	8	350
Eureka Community Hospital	Gen	NPA's'n	20	4	20	8	350
Faulkton 779—Faulk	Gen	County	17	3	4	9	307
Faulk County Hospital	Gen	County	17	3	4	9	307
Handrean 134—Moody	Gen	Indiv	9	1	11	4	161
Moody County Hospital	Gen	Indiv	9	1	11	4	161
Ft. Meade—Meade	Gen	Army	70	2	22	60	1,914
Station Hospital	Gen	Army	70	2	22	60	1,914
Ft. Thompson 6—Buffalo	Gen	IA	12	3	24	14	446
Nareco Indian Hospital	Gen	IA	12	3	24	14	446
Hot Springs 200—Fall River	Gen	Church	6	6	30	9	251
Lutheran Sanatorium and Hosp	Gen	Church	6	6	30	9	251
Our Lady of Lourdes Hospital and Sanitarium	Gen	Church	6	6	30	9	251
Veterans Admin Facility	Gen	Vet	6	6	30	9	251

SOUTH DAKOTA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Huron 1046—Beadle	Gen	Corp	54	8	88	26	1,246
Sprague Hospital	Gen	Corp	54	8	88	26	1,246
Lead 5733—Lawrence	Gen	NPA's'n	21	3	1	16	532
Homeside Hospital	Gen	NPA's'n	21	3	1	16	532
Lemmon 1508—Perkins	Gen	Indiv	12	2	10	5	226
Lemmon Hospital	Gen	Indiv	12	2	10	5	226
Madison 4289—Lake	Gen	NPA's'n	50	12	71	17	821
Madison Community Hospital	Gen	NPA's'n	50	12	71	17	821
Midbank 2389—Grant	Gen	Church	21		67	6	337
St. Bernard Providence Hosp	Gen	Church	21		67	6	337
Miller 1447—Hand	Gen	Indiv	18	3	41	11	325
Miller Hospital and Clinic	Gen	Indiv	18	3	41	11	325
Mitchell 10942—Davison	Gen	Church	100	11	149	50	1,400
Methodist State Hospital	Gen	Church	100	11	149	50	1,400
St. Joseph Hospital	Gen	Church	70	16	161	52	1,931
Midbridge 3464—Walworth	Gen	Indiv	20	6	40	8	401
Lowe Hospital	Gen	Indiv	20	6	40	8	401
Midbridge Hospital	Gen	NPA's'n	20	12	29	11	337
New Underwood 311—Pennington	Gen	NPA's'n	17	6	74	19	191
New Underwood Community Hospital	Gen	NPA's'n	17	6	74	19	191
Pierre 3609—Hughes	Gen	Church	102	18	126	8	296
St. Mary's Hospital	Gen	Church	102	18	126	8	296
Pine Ridge 618—Shannon	Gen	IA	49	8	110	49	1,221
Pine Ridge Hospital	Gen	IA	49	8	110	49	1,221
Rapid City 10404—Pennington	Gen	Church	61	1	114	33	1,349
Black Hills Methodist Hosp	Gen	Church	61	1	114	33	1,349
St. John's McManis Hosp	Gen	Church	11	162	40	1,424	
Radfield 2664—Spink	Gen	City	11	3	6	6	282
Radfield Community Hospital	Gen	City	11	3	6	6	282
Rosebud 190—Todd	Gen	IA	50	6	74	31	720
Rosebud Agency Indian Hosp	Gen	IA	50	6	74	31	720
Sanator 10—Custer	TB	State	192		17	148	
South Dakota State Sanatorium for Tuberculosis	TB	State	192		17	148	
Sioux Falls 33763—Minnehaha	Gen	Church	92	18	187	60	2,360
St. Mary's Hospital	Gen	Church	92	18	187	60	2,360
St. Mary's Hospital and Clinic	Gen	Church	92	18	187	60	2,360
Sioux Falls Hospital	Gen	NPA's'n	111	20	240	61	2,110
Volga 604—Brookings	Gen	NPA's'n	16	3	No data supplied		
Volga Hospital	Gen	NPA's'n	16	3	No data supplied		
Watertown 10214—Codington	Gen	Corp	7	6	53	1,642	
Bartron Hospital	Gen	Corp	7	6	53	1,642	
Luther Hospital	Gen	Church	6	12	110	36	1,119
Webster 180—Day	Gen	Indiv	60	9	101	3	1,171
Penbody Hospital	Gen	Indiv	60	9	101	3	1,171
Winner 2220—Tripp	Gen	Indiv	12	2	28	6	181
Wilson Hospital	Gen	Indiv	12	2	28	6	181
Winner General Hospital	Gen	Indiv	12	2	28	6	181
Yankton 6072—Yankton	Gen	Church	10	0	164	77	1,925
Sacred Heart Hospital	Gen	Church	10	0	164	77	1,925
Yankton State Hospital	Gen	State	1626		1103	574	

Related Institutions

Avon 60—Bon Homme	Gen	Indiv	3	4	2		
Hollingsworth Hospital	Gen	Indiv	3	4	2		
Camp Crook 161—Harding	Gen	Indiv	10	2	12	8	43
Camp Crook Hospital	Gen	Indiv	10	2	12	8	43
Flandreau 1934—Moody	Gen	IA	7	1	4	14	467
Flandreau Indian School Hosp	Gen	IA	7	1	4	14	467
Garretson 65—Minnehaha	Gen	Indiv	10	2	4	1	59
De Vall Hospital	Gen	Indiv	10	2	4	1	59
Hot Springs 290—Fall River	Gen	Indiv	10	2	4	1	59
State Soldiers Home Hospital	Gen	State	70		18	194	
Onda 363—Sully	Gen	Indiv	13	4	No data supplied		
Onda Hospital	Gen	Indiv	13	4	No data supplied		
Pierre 3609—Hughes	Gen	IA	6		4	250	
Pierre Indian School Hospital	Gen	IA	6		4	250	
Platte 1207—Charles Mix	Gen	Indiv	7	3	16	3	150
Platte Hospital	Gen	Indiv	7	3	16	3	150
Redfield 2664—Spink	Gen	State	60		627	53	
State School and Home for Feeble-minded	Gen	State	60		627	53	
Wagner 1490—Charles Mix	Gen	Indiv	8	2	1	174	
Dulgan Hospital	Gen	Indiv	8	2	1	174	
Pinard Hospital	Gen	Indiv	7	2	1	42	

Summary for South Dakota

Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted
Related institutions	48	4,471	720	79,777
Totals	11	500	680	1,191
Refused registration	9	2,112	4,000	41,110

TENNESSEE

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Athens 1—McMinn	Gen	IA	10	3	40	4	150
Force Hospital	Gen	IA	10	3	40	4	150
Brownsville 7204—Haywood	Gen	NPA's'n	32	4	38	10	527
Haywood County Memorial Hospital	Gen	NPA's'n	32	4	38	10	527
Chattanooga 119,4—Hamilton	Gen	CrCo	229	26	854	17	7,779
Baroness Frlanger Hosp	Gen	CrCo	229	26	854	17	7,779
Children's Hosp	Gen	CrCo	77	11	189	49	1,711
Newell and Newell Sanitarium	Gen	Part	72	2	1	2	111
Pine Breeze Sanatorium	Gen	NPA's'n	240		222	16	

TENNESSEE—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Clarksville 9242—Montgomery Clarksville Home Infirmary (col)	Gen	Indiv	25	6	3	14	360
Clarksville Hospital	Gen	NPAsn	40	6		10	
Cleveland 9136—Bradley Speck Hospital	Gen	NPAsn	30	2		5	
Columbia 7882—Maury Kings Daughters Hospital	Gen	NPAsn	50	6	27	12	728
Dayton 2006—Rhea Broyles Private Hospital	Gen	Indiv	12	2	8	6	288
Dyersburg 8732—Dyer Baird Brewer General Hosp	Gen	Corp	50		21	14	730
Elizabeth 8043—Carter St Elizabeth General Hospital	Gen	Corp	25	6	56	7	450
Greeneville 5544—Greene Greeneville Sanatorium and Hospital	Gen	Corp	60	3	13	19	751
Takoma Hospital and Sanit	Gen	Corp	40	6	30	20	855
Humboldt 4612—Gibson Oursler Clinic	Gen	Indiv	10	4	52	4	312
Jackson 22172—Madison Memorial Hospital	Gen	NPAsn	30	5	50	12	579
Web Williamson Hospital Clinic	Gen	Corp	24	6	39	14	646
Jefferson City 1898—Jefferson Jefferson Hospital	Gen	Indiv	25	2	96	10	1400
Johnson City 20080—Washington Appalachian Hospital	Gen	Corp	50	6	108	28	1024
Campbell's Eye Ear, Nose and Throat Hospital	ENT	Indiv	10			2	700
Jones Eye Ear Nose and Throat Hospital	ENT	Indiv	17			6	
Parker Budd Clinic and Hosp	Gen	Part	20	2	4	8	263
Veterans Admin Facility	Gen	Vet	565			447	2709
Kingsport 11914—Sullivan Holston Valley Community Hospital	Gen	NPAsn	53	8		New	
Knoxville 105802—Knox Beverly Hills Sanatorium	TB	CyCo	165			123	147
Dr H E Christenberry Eye Ear Nose and Throat Infirm	FNT	Indiv	12			2	337
Eastern State Hospital	Ment	State	144			1300	431
Ft Sanders Hospital	Gen	NPAsn	130	15	325	67	2743
Knoxville General Hospital	Gen	City	350	30	745	152	6460
St Mary's Memorial Hospital	Gen	Church	63	12	191	48	1420
Lawrenceburg 3102—Lawrence Lawrenceburg Sanatorium and Hospital	Gen	NPAsn	25	3	22	6	400
Lebanon 4636—Wilson Martha Gaston Hospital	Gen	Indiv	23	1	12	11	498
McFarland Hospital	Gen	Indiv	12	1	28	12	408
Loudon 2578—Loudon Harrison Memorial Hospital	Gen	Part	12		1	4	90
Madison 89—Davidson Madison Rural Sanitarium and Hospital	Gen	NPAsn	100	6	72	54	1297
Maryville 498—Blount Carson's Hospital	Gen	Indiv	20		23	5	191
Memphis 253143—Shelby Baptist Memorial Hospital	Gen	Church	380	20	537	300	13400
Collins Chapel Connectional Hospital (col)	Gen	NPAsn	50	4	No data supplied		
Crippled Children's Hospital School	Orth	NPAsn	36			33	156
Gartly Ramsey Hospital	Gen	Corp	42	8	64	26	1046
Hospital for Crippled Adults	Orth	NPAsn	70			16	212
Lynnhurst Sanitarium	N&M	Indiv	20			9	37
Memphis Eye Ear Nose and Throat Hospital	ENT	NPAsn	69			20	1704
Memphis General Hospital	Gen	City	264	36	1211	377	14043
Methodist Hospital	Gen	Church	155	30	707	122	4419
St Joseph's Hospital	Gen	Church	200	36	693	107	4147
U S Marine Hospital	Gen	USPHS	100			110	1582
Veterans Admin Facility	Gen	Vet	400			342	3330
Wallace Sanitarium	N&M	Part	50			30	460
Willis C Campbell Clinic	Orth	Part	50			30	817
Morristown 7305—Hamblen Morristown General Hospital	Gen	NPAsn	20	3	12	8	320
Murfreesboro 7993—Rutherford Rutherford Hospital	Gen	Corp	42	8	121	17	910
Nashville 153866—Davidson Barr Infirmary	Gen	Indiv	20		No data supplied		
Central State Hospital	Ment	State	1700			1662	572
City View Sanitarium	N&M	Indiv	60			32	439
Davidson County Tuberculosis Hospital	TB	County	300			240	275
Geo W Hubbard Hospital of Meharry Medical College (col)	Gen	NPAsn	152	20	203	77	2226
Hospital for the Criminal Insane	Unit of Central State Hospital						
Middle E Hale Hospital (col)	Gen	Corp	40	10	14	14	246
Nashville General Hospital	Gen	City	270	30	746	196	4423
Protestant Hospital	Gen	NPAsn	100	12	209	60	2830
St Thomas Hospital	Gen	Church	200	20	357	100	4296
Vanderbilt University Hosp	Gen	NPAsn	195	15	311	157	4737
Newport 2080—Cocke Dr E E Northcutt Infirmary	Gen	Indiv	13	3	17	10	367
Oakville 163—Shelby Oakville Memorial Sanatorium	TB	CyCo	300			296	400
Paris 8164—Henry McSwain Clinic	Gen	Indiv	16	4	22	10	434
Nobles Memorial Hospital	Gen	Part	22	2	10	5	206

TENNESSEE—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Pleasant Hill 163—Cumberland Uplands Cumberland Mountain Sanatorium	G&TB	NPAsn	20	4	13	8	133
Pressmen's Home 160—Hawkins International Printing Press men and Assistants Union Sanatorium	TB	NPAsn	60			21	13
Pulaski 3367—Giles Pulaski Hospital	Gen	Indiv	20	2	18	7	391
Richard City 522—Marion Dixie Hospital	Gen	Indiv	10	2	4	3	51
Ridgetop 196—Robertson Watauga Sanitarium	TB	Corp	40			11	24
Rockwood 3898—Roane Chamberlain Memorial Hosp	Gen	NPAsn	40	5	38	19	760
Rogersville 1590—Hawkins Lyons Private Hospital	Gen	Indiv	15	3	28	12	242
Sewanee 530—Franklin Emerald Hodgson Memorial Hospital	Gen	Church	20	10	50	9	501
Shelbyville 5010—Bedford Bedford County Hospital	Gen	NPAsn	25	2	20	10	550
Springfield 5577—Robertson Robertson County Hospital	Gen	County	40	6	12	14	300
Sweetwater 2271—Monroe Sweetwater Hospital	Gen	Part	12	4	10	7	287
Western State Hospital—Hardeman Western State Hospital	Ment	State	1916			177	617
Woodbury 502—Cannon Good Samaritan Hospital	Gen	Indiv	25	6	15	8	156
Related Institutions							
Chattanooga 119798—Hamilton William L Bork Memorial Hospital	Ment	County	213			203	112
Copperhill 1000—Polk Tennessee Copper Company's Hospital	Indus	Corp	14		4	7	36
Donelson 110—Davidson Tennessee Home and Training School for Feeble-minded Persons	MeDe	State	620			608	44
Etowah 4209—McMinn Etowah Hospital	Gen	Part	12	3	12	3	100
Fayetteville 3822—Lincoln Lincoln County Hospital	Gen	County	30	2	15	9	408
Knoxville 105802—Knox Tennessee School for Deaf University of Tennessee Hosp	Inst	State	20			12	508
Maryville 4908—Blount Burchfield's Eye Ear and Throat Hospital	ENT	Indiv	5			2	211
McMinnville 3914—Warren McMinnville Infirmary	Gen	Indiv	10	3		2	
Memphis 253143—Shelby Ella Oliver Home	Mat	NPAsn	30	12		4	
Shelby County Hospital	Inst	County	800			504	528
Monterey 1731—Putnam Officer Sanatorium	G&TB	Indiv	10			6	10
Nashville 153866—Davidson Davidson County Hospital	Ment	County	700			617	466
Davidson County Isolation Hospital	Iso	County	50			9	54
Junior League Home for Crippled Children	Orth	NPAsn	36			36	109
Tennessee Industrial School	Inst	State	40			10	
Tennessee State Prison Hosp	Inst	State	122			56	630
Pickwick Dam—Hardin Pickwick Dam Infirmary	Gen	FedNPAsn	22	2		New	
Raleigh 287—Shelby Cheerfield Farm Preventorium	TB	CyCo	50			45	

Summary for Tennessee

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	80	11783	9234	106300
Related institutions	19	2671	2182	3891
Totals	99	14454	11406	110200
Refused registration	8	192		

TEXAS

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Ablene 23170—Taylor Ablene State Hospital	Epi	State	1100	61	8	1063	218
West Texas Baptist Sanit	Gen	Church	61	8	240	50	3060
Alice 4239—Jim Wells Alice Hospital	Gen	Part	12	3	21	6	301
Amarillo 43132—Potter Northwest Texas Hospital	Gen	County	75	10	200	47	1660
St Anthony's Hospital	Gen	Church	100	12	207	60	2139
Archer City 1512—Archer Archer Hospital	Gen	Indiv	16	4	No data supplied		
Austin 03120—Travis Austin State Hospital	Ment	State	2301			2227	30
Brackenridge Hospital	Gen	City	115	15	609	60	3774

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Bassineets	Number of Births	Average Patients	Patients Admitted
St David's Hospital	Gen	Church	44	8	53	23	1 438
Seton Infirmary	Gen	Church	100	10	2 9	56	12 497
Baillinger 4157—Runnels	Gen	Part	15	4	10	6	316
Halley and Love Sanitarium	Gen	Part	15	4	10	6	316
Bastrop 1 632—Bastrop	Gen	NPA's n	14	3	16	5	310
F A Organ Memorial Hosp	Gen	NPA's n	14	3	16	5	310
Bay City 4 670—Matagorda	Gen	Indiv	15	5	41	4	230
Dr Loos Hospital	Gen	Indiv	15	5	41	4	230
Beaumont 57 732—Jefferson	Gen	Church	175	14	262	80	2 416
Hotel Dieu Hospital*	Gen	Church	175	14	262	80	2 416
Jefferson County Tuberculosis Hospital	TB	County	82			72	85
Jefferson County Tuberculosis Hospital (col)	TB	County	20			21	20
St Therese Hospital	Gen	Church	75	10	260	39	1 841
Belton 3 719—Bell	Gen	Part	14	3	25	4	206
Belton General Hospital	Gen	Part	14	3	25	4	206
Big Spring 13 735—Howard	Gen	Corp	35	10		8	
Big Spring Hospital	Gen	Corp	19	6	44	6	304
Bivings Hospital	Gen	Indiv	19	6	44	6	304
Bonham 5 655—Fannin	Gen	NPA's n	28	4	38	11	430
S B Allen Memorial Hosp	Gen	NPA's n	28	4	38	11	430
Borger 6 332—Hutchinson	Gen	County	20	5	241	6	608
North Plains Hospital	Gen	County	20	5	241	6	608
Bowie 3 131—Montague	Gen	Corp	15	3	12	5	258
Bowie Clinic Hospital	Gen	Corp	15	3	12	5	258
Brackettville 1 822—Kinney	Gen	Army	40	1	23	16	488
Station Hospital	Gen	Army	40	1	23	16	488
Brady 3 953—McCulloch	Gen	Part	45	5	88	18	795
Brady Hospital	Gen	Part	45	5	88	18	795
Breckenridge 7 569—Stephens	Gen	Corp	25	3	No data supplied		
West Side Hospital	Gen	Corp	25	3	No data supplied		
Brenham 5 974—Washington	Gen	Church	30	5	30	8	457
St Francis Hospital	Gen	Church	30	5	30	8	457
Sarah B Milroy Memorial Hosp	Gen	Corp	25	2	29	8	479
Brownsville 22 021—Cameron	Gen	Church	50	10	107	868	
Mercy Hospital	Gen	Army	50	1	14	7	335
Station Hospital	Gen	Army	50	1	14	7	335
Brownwood 19 769—Brown	Gen	Corp	30	3	21	12	717
Central Texas Hospital	Gen	Corp	23	3	38	6	727
Medical Arts Hospital	Gen	Corp	23	3	38	6	727
Stump General Hospital	Gen	Indiv	13	2	23	6	253
Bryan 7 814—Brazos	Gen	Indiv	19	2	66	7	475
Wilkinson Memorial Clinic	Gen	Indiv	19	2	66	7	475
Cameron 4 565—Milton	Gen	Part	50	4	60	22	645
Cameron Hospital	Gen	Part	50	4	60	22	645
Canadian 2 068—Hemphill	Gen	Indiv	10	2	19	2	120
Canadian Hospital	Gen	Indiv	10	2	19	2	120
Center 2 510—Shelby	Gen	Indiv	13	1	5	2	105
Center Sanitarium	Gen	Part	12	1	4	2	75
Warren Hospital	Gen	Part	12	1	4	2	75
Childress 7 163—Childress	Gen	Part	30	2	82	8	430
Jeter Town end Hospital	Gen	Part	30	2	82	8	430
Cisco 6 021—Eastland	Gen	Indiv	22	2	46	7	2 654
Graham Sanitarium	Gen	Indiv	22	2	46	7	2 654
Cleburne 11 539—Johnson	Gen	Indiv	20	5		5	
Cleburne Sanitarium	Gen	Indiv	20	5		5	
Coleman 6 078—Coleman	Gen	CyCo	40	2	40	8	372
Overall Memorial Hospital	Gen	CyCo	40	2	40	8	372
Colorado 4 671—Mitchell	Gen	Indiv	20	2	22	6	338
C L Root Hospital	Gen	Indiv	20	2	22	6	338
Conroe 2 457—Montgomery	Gen	Indiv	18	6	32	5	397
Mary Swain Sanitarium	Gen	Indiv	18	6	32	5	397
Corpus Christi 27 741—Nueces	Gen	NPA's n	65	10	99	34	1 988
Ired Roberts Memorial Hosp	Gen	NPA's n	65	10	99	34	1 988
Medical Professional Hospital	Gen	Corp	25	5	75	15	1 090
Spohn Hospital	Gen	Church	50	12	210	31	1 544
Corleanna 15 202—Navarro	Gen	Corp	20	2	11	5	215
Corleanna Hospital and Clinic	Gen	Corp	20	2	46	8	516
Navarro Clinic Hospital	Gen	Corp	20	2	46	8	516
Physicians and Surgeons Hosp	Gen	County	65	8	25	15	672
Cuero 4 652—De Witt	Gen	Church	35	2	15	13	360
Burns Hospital	Gen	Church	35	2	15	13	360
Lutheran Hospital	Gen	Church	35	2	15	13	360
Dallas 260 475—Dallas	Gen	Church	300	44	1 094	968	10 763
Baylor University Hospital**	Gen	Church	300	44	1 094	968	10 763
Bradford Memorial Hospital for Babies	Chil	NPA's n	60	6		33	900
Carroll Driver Girard Clinic and Dallas Orthopedic Hospital	Orth	Part	25			12	262
Dallas Medical and Surgical Clinic Hospital	Gen	Part	27			17	1 068
Dallas Methodist Hospital	Gen	Church	82	18	52	61	2 895
Medical Arts Hospital	Gen	Indiv	70		1	2	2 246
Parkland Hospital	Gen	CyCo	255	3	11 4	240	7 252
Parkland Clinic (col)	Gen	Indiv	15	2	9	6	260
Rushing Clinic and Sanitarium	Gen	Indiv	15	2	20	16	612
St Paul's Hospital	Gen	Church	270	20	678	184	6 701
Texas Scottish Rite Hospital for Crippled Children	Orth	Frat	50			37	640
Timberlawn Sanitarium	Ment	Corp	40			20	172
Woodlawn Sanitarium	TB	CyCo	155			105	223
Denton 13 850—Gray on	Gen	NPA's n	25	3	58	10	418
Denison City Hospital	Indus	NPA's n	65			45	985
M K T Railroad Employees Hospital	Indus	NPA's n	65			45	985
Denton 5 850—Denton	Gen	Indiv	21	4	45	11	450
Denton Hospital and Clinic	Gen	Indiv	21	4	45	11	450
Fidburg 4 621—Hidalgo	Gen	CyCo	60	12	52	21	511
City County Hospital	Gen	CyCo	60	12	52	21	511
Electra 6 712—Wichita	Gen	Part	24	4	27	3	181
Farley Ogden Hospital	Gen	Part	24	4	27	3	181

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Bassineets	Number of Births	Average Patients	Patients Admitted
El Paso 10 421—El Paso	Gen	CyCo	150	8	265	102	3 917
El Paso City County Hosp *	Gen	Frat	50	20	286	38	1 429
El Paso Masonic Hospital	Gen	Frat	50	20	286	38	1 429
Hendrick's Laws Sanatorium	TB	Part	57			46	108
Homan Sanatorium	TB	Corp	110			65	175
Hotel Dieu Sisters Hospital	Gen	Church	100	23	296	57	2 438
Long Sanatorium	TB	Indiv	40			32	108
Price Sanatorium	TB	Indiv	20			12	39
Providence Hospital	Gen	Indiv	45	3	32	20	1 065
St Joseph's Sanatorium*	TB	Church	75			54	129
Southern Baptist Sanatorium	TB	Church	85			55	108
William Beaumont General Hospital	Gen	Army	512	7	77	255	3 254
Floresville 1 581—Will on	Gen	Part	10	2	8	2	106
Oxford Archer Hospital	Gen	Part	10	2	8	2	106
It Worth 163 477—Tarrant	Gen	Church	85	15	118	13	625
All Saints Episcopal Hospital	Gen	Church	60	12	No data supplied		
Baptist Hospital	Gen	CyCo	96	15	785	93	2 601
City and County Hospital**	Gen	Corp	45	8	81	21	777
W T Cook Memorial Hospital	Chil	NPA's n	37			34	364
Et Worth Children's Hospital	Chil	NPA's n	90	10	36	26	1 240
Harris Clinic Hospital	Gen	Church	105	22	542	57	2 161
Methodist Hospital	Gen	Church	184	16	255	91	3 406
St Joseph's Hospital**	Gen	Church	184	16	255	91	3 406
Freepoint 3 162—Brazoria	Gen	Corp	18	6	84	8	2 248
Freeport Hospital	Gen	Corp	18	6	84	8	2 248
Galveston 52 938—Galveston	Gen	Corp	18	6	84	8	2 248
Galveston State Psychopathic Hospital	Ment	State	55			51	299
John Sealy Hospital**	Gen	City	350	24	532	253	5 759
St Mary's Infirmary**	Gen	Church	205	20	355	115	3 205
Station Hospital	Gen	Army	25			12	472
U S Marine Hospital	Gen	USPHS	106			152	1 916
Georgetown 3 543—Williamson	Gen	Part	15	4	31	6	237
Martin Hospital	Gen	Part	15	4	31	6	237
Gilmer 1 963—Upshur	Gen	Indiv	15	3	33	3	120
Elmwood Sanitarium	Gen	Indiv	17	3	36	4	300
Oaklawn Sanitarium	Gen	Indiv	17	3	36	4	300
Gladewater 550—Gregg	Gen	Indiv	20	6	66	6	407
Patton Hospital	Gen	Indiv	20	6	66	6	407
Gonzales 3 859—Gonzales	Gen	Corp	25	3	20	5	310
Holmes Hospital	Gen	Corp	25	3	20	5	310
Gorman 1 154—Eastland	Gen	Part	30	3			
Blackwell Sanitarium	Gen	Part	30	3			
Graham 4 981—Young	Gen	NPA's n	16	2	82	13	541
Graham Hospital	Gen	NPA's n	16	2	82	13	541
Greenville 12 407—Hunt	Gen	Indiv	16			5	4
Dr E P Becton's Hospital	Surg	Indiv	16			5	4
Groesbeck 2 039—Limestone	Gen	Indiv	9	2	20	2	145
Dr Cox's Hospital	Gen	Indiv	9	2	20	2	145
Gulf 725—Matagorda	Gen	Indiv	9	2	20	2	145
Texas Gulf Sulphur Company Hospital	Gen	Corp	14	2	12	2	75
Hallettsville 1 406—Lavaca	Gen	Corp	15	4	20	5	175
Renger Hospital	Gen	Indiv	15	4	20	5	175
Hamilton 2 084—Hamilton	Gen	Corp	38	4	48	8	460
Hamilton Sanitarium	Gen	Corp	38	4	48	8	460
Harlingen 12 124—Cameron	Gen	Church	35	4	94	12	650
Valley Baptist Hospital	Gen	Church	35	4	94	12	650
Henderson 2 932—Rock	Gen	Corp	30	4	No data supplied		
Henderson Hospital	Gen	Corp	30	4	No data supplied		
Hereford 2 458—Deaf Smith	Gen	County	14	4	34	4	201
Deaf Smith County Hospital	Gen	County	14	4	34	4	201
Hillboro 7 823—Hill	Gen	Indiv	23	3	14	6	348
Boyd Sanitarium	Gen	Indiv	23	3	14	6	348
Houston 292 352—Harris	Gen	Indiv	23	3	14	6	348
Avery Memorial Hospital	Gen	Indiv	23	3	14	6	348
School Children's Unit of Houston Tuberculosis Hospital	N & M	Corp	35			24	166
Dr Greenwood's Sanitarium	Gen	Corp	30	10	203	10	869
Heights Clinic Hospital	Gen	Corp	30	10	203	10	869
Hermann Hospital**	Gen	NPA's n	176	20	445	127	4 963
Houston Eye Ear Nose and Throat Hospital	Gen	NPA's n	24			4	1 125
Houston Negro Hospital	Gen	NPA's n	50	4	21	12	410
Houston Tuberculosis Hospital	TB	CyCo	172			167	366
Jefferson Davis Hospital**	Gen	CyCo	181	17	1 254	190	7 474
Memorial Hospital	Gen	Church	150	21	1 150	151	7 125
Methodist Hospital	Gen	Church	100	10	321	64	2 682
Park View Hospital	Gen	Corp	21	4	79	9	458
St Joseph's Infirmary	Gen	Church	207	18	994	134	7 739
Southern Pacific Hospital	Indus	NPA's n	140			67	2 339
Turner Urological Institute	Urol	Part	16			6	765
Jacksonville 6 748—Cherokee	Gen	NPA's n	43	5	70	25	1 442
Nan Travis Memorial Hospital	Gen	NPA's n	43	5	70	25	1 442
Ja per 3 793—Jasper	Gen	Part	17	2	29	11	360
Hardy Hancock Hospital	Gen	Part	17	2	29	11	360
Kelly Field—Bexar	Gen	Army	20			14	709
Station Hospital	Gen	Army	20			14	709
Kerrville 4 546—Kerr	Gen	Indiv	25	2	8	8	227
Kerrville Clinic and Secor Hosp	Gen	Indiv	25	2	8	8	227
Thompson Sanatorium	TB	Indiv	86			45	150
Kingville 6 515—Kleberg	Gen	County	50	6	20	20	572
Kleberg County Hospital	Gen	County	50	6	20	20	572
Knox City 906—Knox	Gen	County	15	4		8	
Knox County Hospital	Gen	County	15	4		8	
Lagrange 2 354—Fayette	Gen	Corp	45	5		11	
Lagrange Hospital	Gen	Corp	45	5		11	
Lamesa 3 525—Dawson	Gen	Indiv	10	4	18	5	121
Lamesa Sanitarium	Gen	Indiv	10	4	18	5	121
Lovell's and Price Hospital	Gen	Part	14	2	37	3	251
Laredo 22 618—Webb	Gen	Church	80	6	77	25	897
Mercy Hospital	Gen	Church	80	6	77	25	897

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Region 819—Kerr							
Veterans Admin Facility	G&TB Vet		430			379	1 417
Livingston 116.—Polk							
Bergmann Hospital	Cen	Indiv	16	2	10	6	570
Lockhart 436.—Caldwell							
Lockhart Sanitarium	Gen	Corp	18	1	9	4	314
Longview 5036—Gregg							
Adams Farrar Hospital	Cen	Part	12	3	78	3	201
Hurst Eye Ear Nose and Throat Hospital	FNT	Indiv	12	3		3	800
Markham Sanitarium	Gen	Indiv	19	3	60	7	560
Jubbock 2050.—Jubbock							
Jubbock Sanitarium	Gen	Corp	8	1	12	61	332
West Texas Hospital	Gen	Corp	60	6	91	23	1 510
Infin 7311—Angelina							
Angelina County Hospital	Cen	County	40	4	80	23	983
Marfa 3900—Presidio							
Station Hospital	Gen	Army	30			New	
Marlin 5338— Falls							
Bue Allen Hospital	Gen	Indiv	21	2	No data supplied		
Shaw Clinic and Hospital	Gen	Indiv	10	2	27	3	111
Forbist Sanatorium and Dispensary	Gen	Indiv	10	2	40	17	1 098
Marshall 16203—Harrison							
Kahn Memorial Hospital	Cen	NPA ss n	25	7	18	6	2 298
Texas and Pacific Railway Employees Ho pital	Indus	Corp	10			61	2 9
McAllen 9074—Hidalgo							
McAllen Municipal Hospital	Gen	City	60	8	70	13	901
McKinney 707—Collin							
McKinney City Hospital	Cen	City	46	4	46	18	570
Memphis 427—Hall							
Memphis Hospital	Gen	Indiv	1	2	6	6	291
Mercedes 6605—Hidalgo							
Mercedes General Hospital	Cen	NPA ss n	2	6	30	4	26
Mexia 6379—I inestonc							
Brown Hospital	Gen	Indiv	1		13	6	40
Midland 5484—Midland							
Midland Clinic Hospital	Gen	Indiv	20	1	42	6	290
Mineral Wells 3986—Palo Pinto							
Nazareth Hospital	Gen	Church	40	4	14	6	95
Nacogdoches 7087—Nacogdoches							
City Memorial Hospital	Gen	City	27	4	35	1	114
Navasota 7178—Crimmes							
Brazos Valley Sanitarium	Gen	Corp	22	4	41	8	37
New Braunfel 6242—Comal							
Comal Sanitarium	Gen	Indiv	10			8	
New Braunfel Hospital	Cen	City	14	3	19	4	278
Newgulf—Wharton							
Texas Culf Sulphur Company Hospital	Cen	NPA ss n	22	2	29	4	279
Odesa 2407—Fetor							
Headlee Hospital	Gen	Indiv	12	3	70	3	1
Olney 4138—Young							
Hamilton Hospital	Gen	City	20	8	No data supplied		
Orange 7917—Orange							
Frances Ann Litcher Hospital	Cen	Indiv	30	10	34	12	780
Paducah 2502—Cottle							
W Q Richard Memorial Hospital	Gen	Indiv	0	10	19	12	412
Palestine 1144.—Anderson							
Missouri Pacific Innes Hospital	Gen	NPA ss n	7	2	2	7	1 011
Palestine Sanitarium	Gen	Corp	20	2	6	6	340
Speckle DuPuy Ho pital and Clinic	Gen	Corp	12	2	26	3	2 5
Pampa 1040.—Gray							
Worley Memorial Hospital	Cen	Indiv	32	7	173	22	1 01
Paris 1049.—Lamar							
Lamar County Hospital	Cen	County	30	7	49	22	760
St Joseph's Infirmary	Gen	Church	30	6	42	12	614
Sanitarium of Paris	Gen	Corp	62	4	49	48	1 42
Pecos 3304—Reeves							
Camp and Camp Hospital	Gen	Part	20	4	50	7	336
Plainview 8834—Hale							
Plainview Sanit and Clinic	Gen	Indiv	50	6	61	28	1 461
Port Arthur 3092.—Jefferson							
St Mary's Hospital Cates Memorial	Gen	Church	10	17	191	30	1 301
Prairie View —Waller							
Prairie View Hospital (col)	Gen	State	0	2	20	26	867
Quanah 4464—Hardenman							
Quanah Hospital	Gen	Part	34	6	42	14	716
Ranger 6208.—Eastland							
City County Hospital	Cen	C Co	30	3	30	10	303
West Texas Clinic Ho pital	Gen	Corp	18	2	17	7	247
Rio Grande 2283.—Starr							
Station Hospital	Cen	Army	40		7	4	170
Rosenberg 1941.—Bend							
Rosenberg Hospital	Gen	Indiv	14	1	16	3	670
Rusk 389.—Cherokee							
Ru A State Hospital	Ment	State	2 000			2 004	3
San Angelo 2,300.—Tom Green							
Rush Schulky Wall and Windham Clinic Hospital	Gen	Corp	2	3	173	11	940
St John's Ho pital	Gen	Church	2	3	0	16	340
Shannon West Texas Memorial Hospital	Gen	NPA ss n	30	10	232	34	2 63
San Antonio 2,132.—Bexar							
Grace Lutheran Sanatorium for Tuberculosis	TB	Church	30	12	47	31	78
Dr Kenney's Sanatorium	Gen	Indiv	75	13	217	46	2 833
Medical and Surgical Hosp	Gen	NPA ss n	30	30	32	198	
Dr Moody's Sanitarium	Gen	N&M Corp	160	24	473	62	3 696
Nic Hospital	Gen	Corp					

TEXAS—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinsets	Number of Births	Average Patients	Patients Admitted
Robert B Green Memorial Hos pital*	Gen	County	130	10	122	106	3 489
San Antonio State Hospital	Ment	State	2 436			300	3 83
Santa Rosa Hospital	Cen	Church	42	44	401	116	4 60
Station Hospital*	Cen	Army	630	16	29	444	6 338
Woodmen of the World War Memorial Hospital	IB	Frat	180			92	148
Sanatorium 46.—Tom Green							
State Tuberculosis Sanatorium	IB	State	718			69	1 969
San Marcos 5134—Hays							
Soldiers and Sailors Memorial Hospital	Gen	Cy Co	2	2	17	3	207
Santa Anna 188.—Coleman							
Sealy Hospital	Cen	Indiv	31			24	1 983
Sealy 1640.—Austin							
Sealy Hospital	Gen	Indiv	10	2	2	4	34
Seagum 322.—Guadalupe							
Seagum Hospital	Gen	Corp	20	2			
Seymour 2626.—Baylor							
Baylor County Hospital	Cen	County	20	3	34	3	960
Shamrock 3380.—Wheeler							
Dr Beach Sanitarium	Cen	Indiv	1		20		900
Shamrock General Hospital	Cen	Indiv	2	4	66	11	339
Sherman 1171.—Crawson							
St Vincent's Sanitarium	Gen	Church	30	6	67	2	38
Wilson N Jones Hospital	Cen	NPA ss n	60	6	91	1	1 196
Shiner 112.—Lavaca							
Dr Wagner's Hospital	Cen	Indiv	20	2	10	7	62
Slaton 36.—Jubbock							
Mercy Hospital	Cen	Church	30	6	20		900
Spur 1399.—Dickens							
Spur Hospital	Gen	Part	20	4	No data supplied		
Stimford 409.—Jones							
Stamford Sanitarium	Gen	Corp	40	3	136	22	1 198
Stephenville 944.—Fath							
Stephenville Ho pital	Cen	Corp	30	1	35	11	349
Sugar Land 2019.—It Bend							
Taura Eldridge Hospital	Gen	NPA ss n	0		34	2	381
Sweetwater 1084.—Nolan							
Sweetwater Sanitarium	Cen	Indiv	16	6	30	9	130
Taylor 746.—Williamson							
Widemeyer Hospital	Gen	Corp	20	3	40	12	4 000
League 3300.—I restonc							
Davidson Sanitarium	Gen	Indiv	20	4		8	
Temple 134.—Bell							
Culf Colorado and Santa Fe Hospital*	Indus	NPA ss n	130			4	906
Kings Daughters Clinic and Hospital*	Gen	NPA ss n	110	8	6	6	2 480
Scott and White Hospital*	Cen	Corp	169	6	7	9	3 04
Woodson Eye Ear Nose and Throat Hospital	IB	Part	14			No data supplied	
Terrell 879.—Kaufman							
Alexander Holton Hospital	Cen	Part	20	3		10	
Terrell State Hospital	Ment	State	2 350			1	496
Texarkana 10602.—Bowie							
Texarkana Hospital	Gen	Corp	40	5	39	20	862
Tyler 1711.—Smith							
Bryant Clinic and Sanitarium	Cen	Indiv	12	3	42	10	341
Vernon 917.—Wilbarger							
King Hospital and Maternity Home	Cen	Indiv	2	4	43	14	296
Moore Brother Hospital	Cen	Part	13	3		7	
Vernon Sanitarium	Gen	Indiv	20	4	56	8	311
Victoria 7421.—Victoria							
Victoria Hospital	Gen	Corp	19	7	38	8	473
Von Ormy 21.—Bexar							
Von Ormy Cottage Sanatorium	IB	Corp	40			8	68
Waco 3235.—McLennan							
Central Texas Baptist Sanit	Gen	Church	6	10	190	0	1 9
Colgin Hospital and Clinic	Gen	Corp	40	2	34	1	68
Providence Sanitarium	Cen	Church	141	9	420	80	4 670
Veterans Admin Facility	Ment	Vet	330			34	1 8
Waxahachie 8042.—Ellis							
Waxahachie Sanitarium	Gen	Corp	32	1	39	12	341
Wellington 370.—Collingsworth							
Wellington Hospital	Gen	Indiv	16	3	34	5	340
Whittsburg—Hutchinson							
Pantex Hospital of the Phillips Petroleum Company	Gen	NPA ss n	12	3	6	2	110
Wichita Fall 4760.—Wichita							
Bethania Hospital	Cen	Church	0	8	130	12	69
Wichita Falls Clinic Hospital	Gen	Part	72	8	120	28	2 69
Wichita Fall State Hospital	Ment	State	2 183			2 033	32
Wichita General Hospital	Gen	Cy Co	120	12	397	61	2 400
Yokum 7636.—Lavaca							
Huth Memorial Hospital	Gen	Church	2	10	30	8	330
Yorktown 1382.—De Witt							
Allen Ho pital	Cen	Indiv	11	2	10		450

Related Institutions

Arlington 111.—Tarrant							
Knights Templar Hospital	Inst	Frat	20			18	193
Austin 3120.—Travis							
Austin State School	MeDe	State	1 140			1 103	58
Oaks Sanitarium	N&M	Corp	20			3	100
Texas Confederate Home Hosp	Inst	State	100				
Texas Deaf Dumb and Blind Institute	Inst	State	30				4 100
Beeville 4806.—Bee							
Beeville Ho pital	Gen	Indiv	26	4	14	14	308
Thomas Memorial Hospital	Gen	Part	22	3	30	11	323
Bellville 1332.—Austin							
Bellville Hospital	Gen	Part	8	1	11	3	243

Key to symbols and abbreviations is on page 798

TEXAS—Continued

Related Institutions	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
College Station 40—Brazos Agricultural and Mechanical College Hospital	Inst	State	80			13	1 630
Crowell 1946—Foard Foard County Hospital	Gen	NPA's n	8	1	No data supplied		
Crystal City 6 609—Zavala	Gen	Corp	12	2	11	3	174
Dallas 260 470—Dallas The Cedars Maternity Sanit School	Mat	Indiv	24	4	5	9	61
Ennis 7 069—Ellis Municipal Hospital	Gen	City	20	5	30	6	250
Floydada 2 637—Floyd Dr. Smith and Smith Sanit	Gen	Part	12			6	
Forney 1 216—Kaufman Forney Sanitarium	Gen	NPA's n	25	7	12	1	47
Ft Worth 163 477—Farrant Elmwood Sanitarium	TB	CyCo	50			47	29
Howard Sanitarium	Conv	Part	14			7	51
Gilmer 1 963—Upshur Ragland Clinic Hospital	Gen	Part	15	2	42	5	38
Greenville 12 407—Hunt Dr. Joe Becton's Hospital	Surg	Indiv	17		4	2	15
Hallettsville 1,406—Lavaca Dufner Hospital	Gen	Indiv	8	1	7	0	154
Huntsville 5 095—Walker Sam Houston Hospital	Gen	Indiv	15	0	12	2	180
Hutchins 368—Dallas Texas State Prison Ho pital	Int	State	137			49	1 60
Kerrville 4 516—Kerr Sunny Side Sanatorium	Inst	CyCo	42			250	124
Luling 5 970—Caldwell Lulling Hospital	Gen	Part	15	4	17	4	172
Midland 4 484—Midland Mid West Hospital Chae	Gen	Indiv	8	3	4	2	209
Mt Vernon 1 222—Franklin Crutcher Hospital	Gen	NPA's n	10	2		3	80
Nixon 1 977—Gonzales Crest View Hospital	Gen	Indiv	8	2	8	3	190
Pearsall 2 536—Frio F. F. Beall's Day Hospital	Gen	Indiv	10	4	15	0	118
Pecos 3 584—Reeves Pecos Sanitarium	Gen	Indiv	11	1	20	4	27
Potter 1 231—Ata co a Community Hospital	Gen	Indiv	7	1	12	2	91
San Antonio 231 542—Bexar Dr. Larmer's Sanatorium	TB	Indiv	20			15	5
Medical Arts Hospital	Gen	Corp	5	4	71	17	1 500
Physicians and Surgeons Hosp o	Gen	Corp	75	12	12	23	1 140
Salvation Army Women's Home and Hospital	Mat	Church	9	15	65	4	97
Station Ho pital	Gen	Army	14			7	51
South Houston 612—Harris South Houston Infirmary	Gen	Fed	210	6	1	90	1 050
Southton 89—Bexar Bexar County Home for the Aged and Bexar County Tu	In t	Fb County	72			10	9
Strawn 1 479—Palo Pinto Strawn Hospital	Gen	Part	5	2	70	1	50
Taylor 7 46—Williamson Dr. Floeckinger's Sanitarium	Gen	Indiv	5	5	No data supplied		
Tulla 2 207—Swisher Swisher County Ho pital	Gen	County	13	3	15	4	150
Wichita Falls 47 690—Wichita Dr. White's Sanitarium	N C M	Corp	18			5	84
Winters 2 497—Runnel Winters Sanitarium	Gen	Part	10		8	2	115
Summary for Texas							
Hospitals and sanatoriums	Number	Beds	Average Patients	Patients Admitted			
Related institutions	242	27 641	20 99	255 116			
Totals	46	2 695	2 079	12 511			
Refu ed registration	25	30 00	23 0 2	270 42			

UTAH

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Bingham Canyon 7 24—Salt Lake Bingham Canyon Ho pital	Gen	Indiv	40		17	12	400
Brigham 69—Box Elder Cooley Memorial Ho pital	Gen	Indiv	21	10			
Cedar City 7 61—Iron Iron County Hospital	Gen	County	25	100	15	701	
Ft Douglas—Salt Lake Station Ho pital	Gen	Army	20			21	119
Ft Duchene 100—Utah Utah and Ouray Agence In	Gen	IA	70	5	75	15	241
Heber 5 47—Wasatch Heber Ho pital	Gen	Indiv	14	4		4	
Lehi 2 55—Utah Lehi Hospital	Gen	Indiv	14	12	64	5	200

UTAH—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Logan 9 970—Cache Cache Valley General Hospital Cen	Gen	NPA's n	30	8	170	22	670
William Budge Memorial Ho p o	Gen	NPA's n	60	14	220	38	2 926
Moab 855—Grand Moab County Public Hospital	Gen	County	16	4	No data supplied		
Ogden 40 22—Weber Thomas D. Dee Memorial Ho pital	Gen	Church	15	70	100	100	4 074
Park City 4 281—Summit Park City Miners Hospital	Gen	NPA's n	50	10	59	16	445
Price 4 084—Carbon Price City Hospital	Gen	City	52	9	37	24	629
Provo 14 766—Utah Aird Hospital	Gen	Part	20			2	6 771
Utah State Hospital	Gen	State	1 000			1 004	221
St George 2 434—Washington Washington County Hospital	Gen	Corp	20	5	75	9	417
Salina 1 887—Sevier Salina Hospital	Gen	Corp	20	4	41	7	530
Salt Lake City 140 767—Salt Lake Dr. W. H. Groves Latter Day	Gen	Church	406	60	1 92	201	57 0
Saints Hospital**	Gen	Church	225	41	613	25	2 900
Holy Cross Hospital**	Gen	Church	75			75	75
Primary Children's Hospital	Gen	Church	149	12	204	105	2 662
St Mark's Hospital**	Gen	County	25	2	42	181	2 906
Salt Lake General Hospital**	Gen	County	25	2	42	181	2 906
Shenners Hospital for Orphaned Children	Orth	Frat	20			20	74
Veterans Admin Facility	Gen	Vet	104			59	84
Tremonton 1 069—Box Elder Valley Hospital	Gen	NPA's n	20	8	57	7	157
Vernal 1 744—Utah Vernal Hospital	Gen	Indiv	11			No data supplied	

Related Institutions

American Fork 7 047—Utah Utah State Training School	McD	State	10			216	1 6
Brigham 1 093—Box Elder Pear e Private Hospital	Gen	Indiv	12	2		3	
Fillmore 1 774—Millard Fillmore Hospital	Gen	Indiv				6	2 40
Harvath 939—Carbon U. S. Fuel Company Hospital	Gen	Corp	10	1	No data supplied		
Midford 1 517—Benavir Midford Hospital	Gen	Indiv	10	3	15	3	250
Murray 5 122—Salt Lake Cottonwood Stake Maternity Hospital	Mat	Church	19	11	20	5	218
Richfield 3 067—Sevier Richfield General Hospital	Gen	Indiv	8			2	40
Spanish Fork 1 27—Utah Hughes Memorial Ho pital	Gen	Indiv	8	3	10	3	160

Summary for Utah

Hospital and sanatoriums	Number	Beds	Average Patients	Patients Admitted
Related institutions	26	25 0	2 006	25 011
Totals	9	447	214	1 0 4
Refu ed registration	31	5 70	2 300	29 0 0

VERMONT

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Barre 11 707—Washington Barre City Hospital	Gen	Corp	50	12	210	24	1 960
Washington County Sanat	Gen	State	47			42	43
Belows Falls 1 950—Windham Rockingham General Hospital	Gen	NPA's n	77	7	107		
Bennington 7 590—Bennington Henry W. Putnam Memorial Ho pital	Gen	NPA's n	56	20	168	45	987
Brattleboro 8 769—Windham Brattleboro Memorial Hosp o	Gen	NPA's n	50	5	25	28	718
Brattleboro Retreat	Gen	NPA's n	700			674	702
Burlington 24 759—Chittenden Bishop DeGoesbriand Hosp o	Gen	Church	112	10	214	80	2 787
Green Mountain Sanatorium	Gen	Indiv	12			7	
Lakeview Sanatorium	N C M	Corp	20			15	8
Mary Fletcher Hospital**	Gen	NPA's n	15	1	4 0	113	474
Ft Ethan Allen 106—Chittenden Station Ho pital	Gen	Army	85			71	1 400
Hardwick 1 667—Caledonia Hardwick Ho pital	Gen	Corp	12	6	25	5	150
Middlebury 2 007—Adirond Porter Memorial Ho pital	Gen	NPA's n	45	10	52	9	90
Montpelier 7 857—Washington Benton Hospital	Gen	Corp	10	8	180	49	1 641
Morrisville 1 822—Lamoille Cooley Ho pital	Gen	NPA's n	55	5	69	16	4 5
Newport 5 094—Orleans Orleans County Memorial Hos pital	Gen	NPA's n	26	6	61	14	417
Pittford 67—Rutland Vermont Sanatorium	TB	State	75			63	97
Proctor 2 715—Rutland Proctor Ho pital	Gen	NPA's n	55	7	70	7	292

Key to symbols and abbreviations is on page 798

VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Winchester 10 830—Frederick	Gen	NPA'ssn	100	20	174	35	2 032
Winchester Memorial Hospital	Gen	NPA'ssn	100	20	174	35	2 032
Related Institutions							
Beaumont—Powhatan	Inst	State	24			12	501
Virginia Industrial School for Boys	Gen	Indiv	14	3	No data supplied		
Bristol 8 840—Washington	Gen	Indiv	4	2	21	2	92
St Ann's Hospital	Gen	Indiv	4	2	21	2	92
Clover 231—Hallfax	Gen	Indiv	4	2	21	2	92
Little Retreat Hospital	Gen	Indiv	4	2	21	2	92
Colon 50—Amherst	Gen	Indiv	4	2	21	2	92
State Colony for Epileptics and Feeble-minded	MeDe	State	1 100			1 007	300
Danville 22 247—Pittsylvania	Gen	NPA'ssn	60	1	No data supplied		
Providence Hospital (col)	Gen	NPA'ssn	60	1	No data supplied		
Falls Church 2 019—Fairfax	Gen	NPA'ssn	60	1	No data supplied		
Gundry Home and Training School for Feeble-minded	MeDe	Indiv	80			78	8
Lawrenceville 1 629—Brunswick	MeDe	Indiv	80			78	8
Loulie Taylor Letcher Memorial Hospital (col)	Inst	Church	24			9	124
Lebanon 500—Russell	Gen	Indiv	15	2	10	5	160
Lebanon General Hospital	Gen	Indiv	15	2	10	5	160
Martinsville 7 700—Henry	Gen	Indiv	14	2	8	5	132
St Mary Hospital (col)	Gen	Indiv	14	2	8	5	132
Shackelford Hospital	Gen	Indiv	10	6	21	20	846
Norfolk 129 710—Norfolk	Gen	Indiv	10	6	21	20	846
Children's Clinic of the Kings Daughters	Chil	NPA'ssn	26			10	341
Florence Crittenton Home	Mat	NPA'ssn	30	4	17	3	42
McCoy Stokes Eye Ear Nose and Throat Hospital	ENT	Part	10			2	242
Richmond 187 999—Henrico	Gen	Indiv	10			2	242
City Home	C&Inst	City	200	14	104	240	590
City Tuberculosis Sanatorium	Unit of the City Home						
Convalescent Home Hospital	Conv	Indiv	40	2	2	28	46
Lee Camp Soldiers Home Hosp	Inst	State	50			96	11
Penitentiary Hospital	Inst	State	50			20	
State Farm 53—Goochland	Inst	State	72			33	710
State Farm Hospital	Inst	State	72			33	710
Staunton 11 000—Augusta	Unit of Western State Hospital					2 150	1 191
Tennet's Sanatorium	Unit of Western State Hospital					2 150	1 191
Western State Hospital	Ment	State	2 500			2 150	1 191
Stonegap 231—Wise	Indus	NPA'ssn	18			6	90
Stonegap Hospital	Indus	NPA'ssn	18			6	90
Sweet Briar 114—Amherst	Inst	NPA'ssn	20			2	107
Sweet Briar College Infirmary	Inst	NPA'ssn	20			2	107
Toms Creek 181—Wise	Indus	NPA'ssn	10			1	5 98
Toms Creek Hospital	Indus	NPA'ssn	10			1	5 98
Waynesboro 6 226—Augusta	Gen	Part	8	5	47	3	110
Weems Watkins Hospital	Gen	Part	8	5	47	3	110
Summary for Virginia							
Hospitals and sanatoriums	21	14 491	10 970			110 972	
Related Institutions	21	14 491	3 740			5 711	
Totals	110	18 770	14 710			116 683	
Refused registration	2	33					

WASHINGTON

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Aberdeen 21 793—Craws Harbor	Gen	Corp	60			48	806
Aberdeen General Hospital	Gen	Corp	60			48	806
St Joseph's Hospital	Gen	Church	60	14	221	63	1 480
American Lake—Pierce	Gen	Church	60	14	221	63	1 480
Veterans Admin Facility	Ment	Net	676			606	170
Anacortes 6 564—Skagit	Gen	Corp	24	4	44	8	403
Anacortes Hospital	Gen	Corp	24	4	44	8	403
Autumn 3 906—King	Gen	Corp	24	4	44	8	403
Suburban Hospital	Gen	Part	40	6	34	5	210
Bellingham 70 523—Whatcom	Gen	Indiv	17	4	68	8	180
St Francis Hospital	Gen	Church	100	14	270	64	1 406
St Joseph's Hospital	Gen	Church	100	14	270	64	1 406
St Luke's General Hospital	Gen	NPA'ssn	60	12	201	51	1 406
Bremerton 10 170—Alta	Gen	Navy	237			167	1 720
St Naval Ho pital	Gen	Navy	237			167	1 720
Burlington 1 40—Skagit	Gen	Indiv	30		No data supplied		
Burlington General Ho pital	Gen	Indiv	30		No data supplied		
Centralia 50 817—Lewis	Gen	Corp	40	7	79	11	416
St Luke's Hospital and Sweet Clinic	Gen	Corp	40	7	79	11	416
Chelan 4 000—Jewell	Gen	Church	30	6	86	11	460
St Helen's Ho pital	Gen	Church	30	6	86	11	460
Chewelah 1 310—Stevens	Gen	Church	10	4	36	14	328
St Joseph's Ho pital	Gen	Church	10	4	36	14	328
Colfax 2 200—Whitman	Gen	Church	50	9	119	41	1 400
St Ignatius Hospital	Gen	Church	50	9	119	41	1 400
Colville 1 003—Stevens	Gen	Part	25	6	20	16	500
Mt Carmel Ho pital	Gen	Part	25	6	20	16	500
Ellensburg 4 621—Kittitas	Gen	Corp	20	8	50	11	543
Ellensburg General Ho pital	Gen	Corp	20	8	50	11	543
Imperial 1 400—Craws Harbor	Gen	Indiv	14	4	26	5	140
Conway Ho pital	Gen	Indiv	14	4	26	5	140
Oriskany Sanatorium	TB	County	60			69	82

WASHINGTON—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Everett 30 567—Snohomish	Gen	NPA'ssn	84	16	290	45	2 170
General Hospital	Gen	NPA'ssn	84	16	290	45	2 170
Providence Hospital	Gen	Church	101	16	237	38	1 209
Forke 80—Challam	Gen	Indiv	20	4	33	8	310
Olympia Hospital	Gen	Indiv	20	4	33	8	310
Ft Lewis 6 040—Pierce	Gen	Army	100	6	90	86	2 530
Station Hospital	Gen	Army	100	6	90	86	2 530
Ft Steilacoom—Pierce	Ment	State	2 200			2 020	660
Western State Hospital	Ment	State	2 200			2 020	660
Ft Worden (Port Townsend P O)	Gen	Army	40			15	340
Station Hospital	Gen	Army	40			15	340
Hoquiam 12 766—Grays Harbor	Gen	Corp	60			146	1 203
Hoquiam General Hospital	Gen	Corp	60			146	1 203
Kirkland 1 714—King	Gen	Indiv	12	4	19	4	140
Kirkland Hospital	Gen	Indiv	12	4	19	4	140
Lakeview 302—Pierce	TB	County	142			127	262
Mountain View Sanatorium	TB	County	142			127	262
Leavenworth 1 415—Chelan	Gen	NPA'ssn	30	6	60	17	1 007
Cascade Sanatorium	Gen	NPA'ssn	30	6	60	17	1 007
Longview 10 602—Cowlitz	Gen	Corp	80	16	180	22	1 230
Longview Memorial Hospital	Gen	Corp	80	16	180	22	1 230
Mason City—Okanogan	Gen	NPA'ssn	40	5	50	31	921
Washington Hospital	Gen	NPA'ssn	40	5	50	31	921
Medical Lake 1 671—Spokane	Ment	State	1 620			1 610	388
Eastern State Hospital	Ment	State	1 620			1 610	388
Mt Vernon 3 690—Skagit	Gen	Indiv	30	6	28	12	402
Mt Vernon General Hospital	Gen	Indiv	30	6	28	12	402
Newport 1 680—Pend Oreille	Gen	NPA'ssn	20	4	46	9	302
Newport Community Hospital	Gen	NPA'ssn	20	4	46	9	302
Olympia 11 730—Thurston	Gen	Church	100	10	100	51	2 180
St Peter's Hospital	Gen	Church	100	10	100	51	2 180
Oroville 800—Okanogan	Gen	Indiv	10	6	42	6	203
Oroville General Hospital	Gen	Indiv	10	6	42	6	203
Pasco 3 496—Franklin	Gen	Church	60	9	130	32	1 218
Our Lady of Lourdes Hospital	Gen	Church	60	9	130	32	1 218
Port Angeles 10 188—Challam	Gen	Part	40	8	77	16	793
Davidson and Hay Hospital	Gen	Part	40	8	77	16	793
Port Angeles General Hosp	Gen	NPA'ssn	80	10	107	53	1 331
Port Townsend 3 979—Jefferson	Gen	Church	90	9	93	30	562
St John's Hospital	Gen	Church	90	9	93	30	562
Puyallup 7 094—Pierce	N CM	Corp	30			18	71
Puget Sound Sanatorium	N CM	Corp	30			18	71
Renton 4 062—King	Gen	Indiv	28	6	81	5	210
Renton Hospital	Gen	Indiv	28	6	81	5	210
Richmond Highlands 34—King	TbIs	City	200			210	108
Irland Sanatorium and Isolation Hospital	TbIs	City	200			210	108
Seattle 360 83—King	Gen	Corp	31	10	97	14	806
Ballard Accident and General Hospital	Gen	Corp	31	10	97	14	806
Children's Orthopedic Hospital	Orth	NPA'ssn	132			120	1 304
Columbus Hospital	Gen	Church	200	30	324	78	2 300
King County Hospital Unit	Gen	County	394	51	941	92	9 742
No 1 (Harborview) Ho pital	Gen	County	394	51	941	92	9 742
King County Tuberculosis Ho pital	TB	County	170			106	137
Laurel Beach Sanatorium	TB	Part	50			44	194
Maynard Hospital	Gen	NPA'ssn	80	20	418	70	2 829
Meadows Sanatorium	N AM	Corp	30			18	152
Providence Hospital	Gen	Church	346	54	747	190	5 383
Riverton Sanatorium	TB	NPA'ssn	60			28	60
St Luke's Hospital	Gen	Corp	46	15	139	16	800
Seattle General Hospital	Gen	NPA'ssn	100	20	384	62	2 382
Station Hospital	Gen	Army	30			6	206
Swedish Hospital	Gen	NPA'ssn	100	60	682	124	4 006
U S Marine Hospital	Gen	USPHS	400			321	2 896
Virginia Mason Hospital	Gen	NPA'ssn	100	30	309	80	3 007
Sedro Woolley 2 710—Skagit	Gen	NPA'ssn	30	7	24	7	300
Memorial Ho pital	Gen	NPA'ssn	30	7	24	7	300
Northern State Ho p and State Narcotic Farm Colony	MentDrug	State	1 608			1 548	333
Shelton 3 091—Mason	Gen	NPA'ssn	34	5	86	19	705
Shelton General Hospital	Gen	NPA'ssn	34	5	86	19	705
Snohomish 2 688—Snohomish	TB	County	40			30	23
Aldercrest Sanatorium	TB	County	40			30	23
Snohomish General Hospital	Gen	Indiv	14	3	68	5	288
South Bend 1 708—Pacific	Gen	Part	30	6	70	10	330
South Bend General Hospital	Gen	Part	30	6	70	10	330
Spokane 110 514—Spokane	Gen	Church	197	30	333	131	4 460
Deaconess Hospital	Gen	Church	197	30	333	131	4 460
Fidgely Sanatorium	TB	County	160			112	120
Sacred Heart Hospital	Gen	Church	270	40	708	216	6 567
St Luke's Hospital	Gen	NPA'ssn	173	10	243	112	3 073
Shriners Hospital for Crippled Children	Orth	Frat	20			20	107
Station Ho pital	Gen	Army	100			70	1 008
Tacoma 106 817—Pierce	Gen	NPA'ssn	111	9	26	48	1 685
Northern Pacific Beneficial Association Hospital	Gen	NPA'ssn	111	9	26	48	1 685
Pierce County Ho pital	Gen	County	197	22	377	231	3 963
St Joseph's Ho pital	Gen	Church	200	0	0	60	3 082
Tacoma General Hospital	Gen	NPA'ssn	187	0	0	80	4 104
Tacoma Ho pital	GATBIA		265			203	1 000
Tonasket 313—Okanogan	Gen	Indiv	10	4	14	4	131
Tonasket Ho pital	Gen	Indiv	10	4	14	4	131
Toppenish 2 774—Yakima	TB	IA	77			36	46
Yakima Sanitarium	TB	IA	77			36	46
Vancouver 10 760—Clark	Gen	County	30	8	76	27	548
Clark County Ho pital	Gen	County	30	8	76	27	548
Clark General Hospital	Gen	NPA'ssn	40	12	151	21	915
St Joseph's Ho pital	Gen	Church	120	12	49	41	1 172
Station Ho pital	Gen	Army	80			45	1 272

Key to symbols and abbreviations is on page 798

WASHINGTON—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basins	Number of Births	Average Patients	Patients Admitted
Walla Walla 1, 976—Walla Walla St Mary's Hospital	Gen	Church	100	17	164	50	1,381
Veterans Admin Facility	G & FB	Vet	400			279	1,042
Walla Walla Sanitarium and Hospital	Gen	Church	50	9	141	21	898
Wenatchee 11 627—Chelan Central Washington Deaconess Hospital	Gen	Church	47	10	238	38	1,027
St Anthony's Hospital	Gen	Church	75	10	221	30	1,015
Yakima 22 101—Yakima St Elizabeth's Hospital	Gen	Church	145	20	424	100	3,925
Yakima County Hospital	Gen	County	50	8	71	36	863

Related Institutions

Chelalis 4 907—Lewis State Training School for Boys	In t	State	2			5	320
Cle Elum 2 508—Kittitas Roslyn Cle Elum Beneficial Company Hospital	Gen	NPA'ssn	20	1	2	10	516
Ione 594—Pend Oreille Ione Hospital	Gen	Indiv	11	3	24	3	420
Jakeview, 312—Pierce Sunnycroft Sanatorium	N & M	Indiv	10			3	
Medical Lake 1 671—Spokane State Custodial School	McDe	State	1 006			1 498	120
Monroe 1 50—Snohomish Monroe General Hospital	Gen	Indiv	15	4	6		240
Snohomish County Hospital and Farm	Inst	County	32	6	3	30	136
Mt Vernon 1 170—Skagit Rowley General Hospital	Gen	Indiv	21	6	No data	supplied	
Seattle 65 51—King Florence Crittenton Home	Mat	NPA'ssn	25	15	33	18	37
Freedlander Sanitarium	Conv	Indiv	12			6	75
King County Hospital Unit No. 2	In t	County	25			264	42
Mason Sanitarium	Conv	Corp	7			12	
Mt Baker Sanitarium	Conv	Indiv	1			12	56
Rest Haven Sanitarium	Conv	Indiv	15			4	
University of Washington Health Service Infirmary	Inst	State	43			11	1,292
Sequim 334—Clallam Sequim Prairie Hospital	Gen	Indiv	12	5	No data	supplied	
Spangle 218—Spokane Spokane County Hospital	In t	County	100			75	766
Spokane 11 514—Spokane Florence Crittenton Home	Mat	NPA'ssn	2	10	22	12	48
Rivercrest Hospital	Io	City	100			9	146
Salvation Army Women's Hospital and Home	Mat	Church	49	28	83	21	128
Sprague 659—Lincoln Sprague Hospital	Gen	Indiv	10	5	25	2	53
Stellacoom 722—Lucas U S Penitentiary Hospital	In t	Fed	80			68	972
Sumas 647—Whatcom Merrillyn Cottage Hospital	Gen	Indiv	7	2	No data	supplied	
Sumas General Hospital	Gen	Indiv	12	2	8	1	33
Tacoma 106 817—Pierce Bellevue Sanatorium	TB	Indiv	1				24
City Contagious Hospital	Iso	City	0	1			112
White Shield Home	Mat	NPA'ssn	20	10	34	10	37
Tulalip 620—Snohomish Tulalip Indian School Hospital	Gen	I A	14	4	32	11	350
Walla Walla 1, 976—Walla Walla Blue Mountain Sanatorium	I B	County	40			30	34
Washington State Penitentiary Hospital	Inst	State	70			No data	supplied

Summary for Washington

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	88	1 975	11 268	116 397
Related institutions	21	2 649	2 204	6 702
Total	119	16 624	15 472	123 099
Refused registration	20	464		

WEST VIRGINIA

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basins	Number of Births	Average Patients	Patients Admitted
Beckley 9 357—Raleigh Beckley Hospital	Gen	Part	1	10	162	107	7 547
Imcrest Sanitarium	I B	State	143			159	164
Raleigh General Hospital	Gen	Corp	60	4	39	5	1,150
Bluefield 16 339—Mercer Bluefield Sanitarium	Gen	Corp	100	0	52	9	370
Brown's Hospital (col)	Gen	Indiv	42	2	10	17	
Providence Hospital (col)	Gen	Indiv	25	2	54	4	150
St Luke's Hospital	Gen	Corp	7	2	54	70	1,708
Puckhannon 4 14—Upshur St Joseph's Hospital	Gen	Church	30	6	75	21	880
Charleston 60 40—Kanawha Charleston General Hospital	Gen	Corp	15	17	14	140	4,946
Kanawha Valley Hospital	Gen	Corp	110	12		80	
McMillan Hospital	Gen	Indiv	90	10	74	37	1,751
Mountain State Hospital	Gen	Corp	55	10	97	41	2,181
St Francis Hospital	Gen	Church	50	10	144	45	1,691
Salvation Army Hospital	Gen	Church	25	4	43	15	480
State's Hospital	Gen	Corp	44	6	59	31	1,611

WEST VIRGINIA—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Basins	Number of Births	Average Patients	Patients Admitted
Charles Town 2 434—Jefferson Charles Town General Hospital	Gen	NPA'ssn	25	4	19		735
Clarksburg 28 866—Harrison St Mary's Hospital	Gen	Church	125	12	134	55	2,110
Union Protestant Hospital	Gen	NPA'ssn	52	10	103	30	1,138
Elkins 7 45—Randolph Davis Memorial Hospital	Gen	Corp	100	8	59	56	9,144
Elkins City Hospital	Gen	Indiv	65	6	30	24	855
Farmont 23 150—Marion Cook Hospital	Gen	Corp	100	10	137	70	2,553
Farmont Emergency Hospital	Gen	State	60		20	50	993
Glen Dale 1 493—Marshall Reynolds Memorial Hospital	Gen	Church	80	10	74	25	845
Hinton 6 64—Summers Hinton Hospital	Gen	Corp	71	4	13	32	453
Holden 2 046—Logan Holden Hospital	Gen	NPA'ssn	30	1	1	11	612
Hopewell 65—Preston Conley Hospital	Unit of	Hopewell Sanitarium	400			356	313
Huntington 7 572—Cabell Chesapeake and Ohio Railway Hospital	Gen	NPA'ssn	110	20	32	90	9,465
Huntington City Hospital	Gen	City	50	2	293	30	873
Huntington Memorial Hospital	Gen	Corp	150	6	74	63	1,938
Huntington Orthopedic Hospital	Orth	NPA'ssn	50			50	437
Moore Beckner Lye Lye and Throat Hospital	LN I	Indiv	10			3	311
St Mary's Hospital	Gen	Church	100	20	28	81	4,187
Veterans Admin Facility	Gen	Vet	210			193	1,555
Kenova 3 606—Wayne Rife Ferguson Hospital	Gen	Part	10	2	15	6	300
Kaysersburg 6 245—Mineral Potomac Valley Hospital	Gen	Corp	45	8	54	3	1,597
Lakin—Mason Lakin State Hospital (col)	Ment	State	450			315	94
Logan 4 336—Logan Logan General Hospital	Gen	Corp	100	8		4	
Marlinton 1 586—Pocahontas Pocahontas Memorial Hospital	Gen	County	22	2	20	11	615
Martinsburg 14 857—Berkeley City Hospital	Gen	NPA'ssn	60	8	42	26	1,015
Kings Daughters Hospital	Gen	NPA'ssn	60	6	69	25	777
McKendree 117—Fayette McKendree Emergency Hospital	Gen	State	65	6	26	47	947
Montgomery 2 906—Fayette Coal Valley Hospital	Gen	Corp	65	5	23	58	993
Morgantown 16 186—Monongalia City Hospital	Gen	Indiv	60	8	50	25	800
Eastmont Tuberculosis Sanat	I B	NPA'ssn	35			30	55
Monongalia County Hospital	Gen	County	65	8	74	41	1,214
Mullens 2 250—Wyoming Mullens Hospital	Gen	Indiv	38	2	17	11	703
New Martinsville 2 814—Wetzel Wetzel County Hospital	Gen	NPA'ssn	20	4	18	12	3,000
Oak Hill 2 076—Fayette Oak Hill Hospital	Gen	Part	50	5	37	25	1,812
Parkerburg 29 625—Wood Camden Clark Memorial Hospital	Gen	City	60	12	193	45	1,774
St Joseph's Hospital	Gen	Church	150	10	157	69	2,036
Phillips 1 787—Barbour Myers Clinic Hospital	Gen	Part	29	3	8	14	761
Princeton 6 955—Mercer Mercer Memorial Hospital	Gen	NPA'ssn	48	4	22	27	846
Lincolnton Hospital	Gen	Corp	36	4	14	10	348
Richwood 5 720—Nicholas McClung Hospital	Gen	Corp	50	4	22	8	327
Sacred Heart Hospital	Gen	Church	35	6	25	12	607
Ronceverte 2 254—Greenbrier Greenbrier Valley Hospital	Gen	Corp	50	4	25	35	650
Sistersville 3 072—Tyler Sistersville General Hospital	Gen	Corp	16	3	No data	supplied	
South Charleston 5,904—Kanawha Dunn Hospital	Gen	Indiv	11	4	10	4	126
Welch 5 376—McDowell Grace Hospital	Gen	Corp	50	6	59	55	2,601
Stevens Clinic Hospital	Gen	Corp	100	6	62	70	3,394
Welch Emergency Hospital	Gen	State	115	2	29	29	2,777
Weston 8 646—Lewis General Hospital	Gen	Indiv	44	3	20	20	559
Weston City Hospital	Gen	Corp	25	7	24		402
Wheeling 61 659—Ohio Ohio Valley General Hospital	Gen	NPA'ssn	230	20	369	151	4,664
Wheeling Hospital	Gen	Church	500	25	364	107	2,671
Williamson 9 410—Mingo Williamson Memorial Hospital	Gen	Corp	50	4	4	35	1,608

Related Institutions

Berkeley Springs 1 050—Morgan The Pines West Virginia Foundation for Crippled Children	Orth	NPA'ssn	20			15	32
Charleston 60 408—Kanawha Hill Crest Sanatorium	TB	NPA'ssn	40			37	34
Huntington 75 572—Cabell Huntington State Hospital	Ment	State	932			899	450
Wilton 1 305—Cabell Morris Memorial Hospital for Crippled Children	Conv	NPA'ssn	32			No data	supplied
Moundsville 14 411—Marshall Grandview Sanatorium	TB	County	32			23	44
West Virginia Penitentiary Hospital	In t	State	74			50	547

Key to symbols and abbreviations is on page 798

WEST VIRGINIA—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Bassinetts	Number of Births	Average Patients	Patients Admitted
St. Mary's 2189—Pleasant							
West Virginia Training School	Med	State	80			83	3
Spencer 2493—Roane							
De Poo Hospital	Gen	Indiv	16	2	12	9	276
Spencer State Hospital	Ment	State	919			8.8	136
Weston 8646—Jewell							
Weston State Hospital	Ment	State	1634	6	81	101	541
Wheeling 6160—Ohio							
Lourence Crittenton Home	Mat	NPA n	24	26	20		24
Ohio County Tuberculo	TB	County	16			16	23

Summary for West Virginia

	Number	Beds	Average Patients	Patients Admitted
Hospitals and sanatoriums	66	5608	3344	102661
Related in titution	12	85	344	2307
Totals	78	5693	3788	104968
Ref. ed registration	2	42		

WISCONSIN

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassinetts	Number of Births	Average Patients	Patients Admitted
Alcona 1202—Kewaunee	Gen	NPA n	10	4	22	4	14
Alcona Hospital							
Amery 1114—Polk	Gen	Corp	1	5	24	3	210
Amery Hospital							
Antigo 8610—Langlade							
Langlade County Memorial	Gen	Church	44	6	98	76	1378
Appleton 2126—Outagamie							
St. Elizabeth Hospital*	Gen	Church	200	50	471	80	3013
Ashland 10622—Ashland							
Ashland General Hospital*	Gen	NPA n	67	8	89	34	918
St. Joseph's Hospital*	Gen	Church	1	1	17	74	2076
Baraboo 1545—Sauk							
St. Mary's Ringling Hospital	Gen	Church	2	10	13		924
Beaver Dam 9857—Dodge							
Lutheran Deaconess Ho pital	Gen	Church	70	8	130	18	800
Beloit 23611—Rock							
Beloit Municipal Hospital	Gen	City	78	12	34	40	1700
Bella 4106—Green Lake							
Antes Memorial Hospital	Gen	NPA n	17	6	6	3	223
Black River Falls 1900—Jackson							
Krohn Clinic and Hospital	Gen	Part	21	6	11	21	66
Boscobel 1762—Grant							
Brookside Parker Ho pital	Gen	Part	22	4	20	7	244
Burlington 4114—Racine							
Memorial Hospital	Gen	NPA n	2	10	174	14	546
Chippewa Falls 979—Chippewa							
St. Joseph's Hospital	Gen	Church	160	1	19	1	198
Columbus 2114—Columbia							
St. Mary's Hospital	Gen	Church	40	6	77	22	583
Cumberland 112—Barron							
Cumberland Hospital	Gen	Part	26	6	42	8	346
Darlington 1764—Lafayette							
Dr. Quinn and McConnell Ho p	Gen	Part	8	3	26	6	139
Delavan 1301—Walworth							
Delavan Sanitarium	N&M	Indiv	20			1	6
Dodgeville 137—Iowa							
Dodgeville General Hospital	Gen	NPA n	24	98	13	846	
St. Joseph's Hospital	Gen	Church	60	1	74	19	1339
Laurens 26757—Laurens							
Laurens Hospital	Gen	NPA n	13	16	318	81	900
Laurens Sanatorium	IB	County	38			59	56
Sacred Heart Hospital	Gen	Church	13	20	38	8	3127
Edgerton 2906—Rock							
Edgerton Memorial Hospital	Gen	NPA n	18	6	11	7	261
Elkhorn 3340—Walworth							
Walworth County Ho pital	Gen	County	37	11	222	71	1179
Fond du Lac 26449—Fond du Lac							
St. Agnes Hospital*	Gen	Church	27	1	1	16	497
Fort Atkinson 788—Jefferson							
Fort Atkinson General Ho p	Gen	Indiv	1		42	6	303
Frederic 180—Polk							
Frederic Hospital	Gen	Indiv	12	4	40	9	47
Friendship 4—Adams							
Friendship Ho pital	Gen	Part	10	2	4	5	113
Grantburg 777—Burnett							
Community Ho pital	Gen	Corp	15	4	70	7	288
Green Bay 37410—Brown							
Helin Memorial Ho pital*	Gen	Church	76	11	171	48	1806
St. Mary's Ho pital*	Gen	Church	100	22	288	1	1
St. Vincent's Hospital	Gen	Church	70	4	449	17	667
Hartford 3734—Washington							
St. Joseph's Hospital	Gen	Church	40	9	79	12	304
Hawthorne St. Douglas							
Middle River Sanatorium	TB	County	141			17	27
Hayward 197—Sauk							
Hayward Indian Ho pital	Gen	IA	4		90	30	941
Hillsboro 7—Vernon							
Hillsboro Ho pital	Gen	Indiv	2			11	379
Iola 761—Waupaca							
Iola Hospital	Gen	Corp	18	6	18	10	189
Janesville 2128—Rock							
Merced Hospital*	Gen	Church	120	70	32	6	1803
Lincoln Sanatorium	TB	County	18			6	30
Jefferson 268—Jefferson							
Forest Lawn Sanatorium	TB	County				2	29

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassinetts	Number of Births	Average Patients	Patients Admitted
Kaukauna 6531—Outagamie							
Riverview Sanatorium	TB	County	63			62	30
Kenosha 50962—Kenosha							
Kenosha Hospital	Gen	NPA n	130	30	263	56	1671
St. Catharines Ho pital and Sanitarium	Gen	Church	18		71	40	1109
Willowbrook Sanatorium	IB	County	28			34	34
Lebanon 20—Shawano							
St. Joseph's Indian Hospital	Gen	Church	63		106	24	814
La Crosse 39614—La Crosse							
Grandview Hospital	Gen	NPA n	106	10	91	39	981
La Crosse Hospital	Gen	NPA n	40	12	124	22	146
La Crosse Lutheran Hospital*	Gen	Church	120	9	122	60	2330
St. Francis Hospital*	Gen	Church	313	40	39	161	4014
Ladysmith 3493—Rusk							
St. Mary's Hospital	Gen	Church	7	8	120	19	739
La Crosse 2432—Grant							
Godfrey Ho pital	Gen	Indiv	12	6	20	4	120
Laona 1109—Forest							
Oritz Hospital	Gen	Indiv	18	4	41	9	277
Madison 57890—Dane							
Lake View Sanatorium	TB	County	140			130	118
Madison General Hospital*	Gen	NPA n	135	2	40	118	4436
Methodist Hospital*	Gen	Church	110	102	4	24	199
Morningside Sanatorium	TB	NPA n	52			40	49
Normandale	N&M	Corp	24			12	176
St. Mary's Hospital*	Gen	Church	17	30	801	110	4126
State of Wisconsin General Hospital*	Gen	State	630	22	138	611	1042
Wisconsin Orthopedic Hospital for Children	Unit of State of Wisconsin General Hospital						
Wisconsin Psychiatric Institute	Unit of State of Wisconsin General Hospital						
Manitowoc 22960—Manitowoc							
Holy Family Ho pital*	Gen	Church	12	20	70	70	2074
Marinette 13734—Marinette							
Marinette and Menominee Hosp	Gen	Corp	0	12	200	70	101
Marshfield 9778—Wood							
St. Joseph's Hospital*	Gen	Church	14	1	27	80	2757
Mauston 2107—Juneau							
Mauston Hospital	Gen	Corp	7	44	17	53	
Medford 1918—Lafayette							
Medford Clinic	Gen	Corp	38	8	40	22	707
Mendota 112—Dane							
Mendota State Ho pital	Ment	State	871			89	1017
Wisconsin Memorial Ho pital	Ment	State	300			88	101
Menomonie 559—Dunn							
Menomonie City Hospital	Gen	City	7	7	47	16	597
Merrill 8438—Lincoln							
Holy Cross Hospital	Gen	Church	0	11	7	18	690
Lincoln County Hospital	Gen	County	70	4	48	27	339
Milwaukee 578249—Milwaukee							
Columbia Hospital*	Gen	NPA n	160	2	239	7	2904
Evangelical Deaconess Hosp*	Gen	Church	137	2	352	68	2938
Johnston Emergency Hospital	Emerg	City	2	4		37	4000
Milwaukee Children's Hosp*	Child	NPA n	1			104	2867
Milwaukee County General Ho pital	Unit of Milwaukee County General Hospital						
Unit of Milwaukee County General Hospital	Unit of Milwaukee County General Hospital						
Milwaukee General Ho pital*	Gen	NPA n	160	4	09	5	2187
Milwaukee Ho pital—The Pas	Gen	Church	219	7	78	174	6338
Misericordia Hospital*	Gen	Church	120	40	81	79	2118
Mt. Sinai Hospital*	Gen	NPA n	142	28	703	113	4089
Sacred Heart Sanatorium*	Gen	Church	32			24	1920
St. Anthony's Hospital	Gen	Church	40	12	267	121	5128
St. Joseph's Hospital*	Gen	Church	32	70	852	121	5128
St. Luke's Hospital*	Gen	Church	100	17	29	39	1649
St. Mary's Hill Sanitarium	N&M	Church	110			74	31
St. Mary's Hospital*	Gen	Church	167	30	47	11	3049
Shorewood Hospital Sanitarium	N&M	Corp	0			2	223
South Side Hospital	Gen	NPA n	0	10	1	0	20
South View Hospital	IB	City	20			174	2848
Stark Hospital	Unit of Milwaukee Children's Hospital						
Veterans Admin Facility	C&TB Vet		1704			968	4773
West Side Hospital	Gen	NPA n	2		26		218
Monroe 501—Green							
Evangelical Deaconess Ho p	Gen	Church	32	12	110	17	769
Mt. Horeb 1423—Dane							
Buckner Hospital	Gen	Indiv	12	6	70	5	702
Deenah 911—Winnebago							
Theodore Clark Memorial Hosp	Gen	NPA n	17	24	33	1217	
New London 4071—Waupaca							
Community Ho pital	Gen	Church	0	8	80	20	64
Memorial Hospital	Gen	Indiv	10	7	18	4	24
Oconomowoc 4110—Waukesha							
Rogers Memorial Sanitarium	N&M	NPA n	0			2	5
Summit Hospital	Gen	Corp	0	6	39	24	790
Oconto 00—Oconto							
Oconto County and City Ho p	Gen	NPA n	20	6	No data supplied		
Oconto Fall 1721—Oconto							
Oconto Falls Ho pital	Gen	NPA n	11		2	6	20
Onalaska 140—Jen Cro e							
Onalaska Sanatorium	TB	County	63			74	87
Oshkosh 4010—Winnebago							
Mercy and St. Mary's Ho p*	Gen	Church	10	20	291	80	4710
Park Fall 100—Lafayette							
Park Fall Ho pital	Gen	Indiv	2	4	40	10	01
Pewaukee 1067—Waukesha							
Oak Sanatorium	TB	County	40			2	44
Platteville 4047—Grant							
Andrew Hospital	Gen	Indiv	1	4	8		178
Will on Cunningham Ho pital	Gen	Corp	2	5	72	10	23
Plymouth 1882—Cheboygan							
Plymouth Hospital	Gen	Church	76	8	97	16	10
Rocky Anoll Sanatorium	TB	County	88			89	97

Key to symbols and abbreviations is on page 798

WISCONSIN—Continued

Hospitals and Sanatoriums	Type of Service	Control	Beds Rated Capacity	Bassinets	Number of Births	Average Patients	Patients Admitted
Portage 6308—Columbia	Gen	Church	65	10	119	24	1 081
St Saviors General Hospital	Gen	Church	65	10	119	24	1 081
Poynette 672—Columbia	Gen	Indiv	11	2	23	4	110
Poynette Hospital	Gen	Indiv	11	2	23	4	110
Prairie du Chien 3943—Crawford	Gen	Corp	60	6	70	29	1 050
Prairie du Chien Sanitarium	Gen	Corp	60	6	70	29	1 050
Prairie du Chien Hospital	Gen	Corp	60	6	70	29	1 050
Prescott 755—Pierce	Gen	N&M	30	4	13	25	95
St Croixdale Sanatorium	Gen	N&M	30	4	13	25	95
Pureair (Bayfield P O)—Bayfield	TB	County	70			69	66
Pureair Sanatorium	TB	County	70			69	66
Racine 67542—Racine	Gen	Church	120	38	514	45	1 995
St Luke's Hospital	Gen	Church	120	38	514	45	1 995
St Mary's Hospital	Gen	Church	144	33	559	87	3 678
Sunny Rest Sanatorium	TB	County	34			34	27
Reedsburg 2967—Sauk	Gen	City	31	8	61	15	576
Reedsburg Municipal Hospital	Gen	City	31	8	61	15	576
Rhineland 8019—Oneida	Gen	Church	65	10	153	30	1 182
St Mary's Hospital	Gen	Church	65	10	153	30	1 182
Rice Lake 5177—Barron	Gen	Church	32	5	104	20	860
Lakeside Methodist Hospital	Gen	Church	32	5	104	20	860
St Joseph's Hospital	Gen	Church	42	6	53	16	723
Richland Center 3632—Richland	Gen	NPA'sn	40	7	50	30	1 308
Richland Hospital	Gen	NPA'sn	40	7	50	30	1 308
St Croix Falls 952—Polk	Gen	Indiv	25	6	41	12	409
St Croix Falls Hospital	Gen	Indiv	25	6	41	12	409
Shawano 4182—Shawano	Gen	CyCo	38	8	107	22	1 106
Shawano Municipal Hospital	Gen	CyCo	38	8	107	22	1 106
Sheboygan 39251—Sheboygan	Gen	Church	123	27	257	45	1 662
St Nicholas Hospital	Gen	Church	123	27	257	45	1 662
Sheboygan Memorial Hospital	Gen	NPA'sn	91	24	241	43	1 427
Shullsburg 1041—Lafayette	Gen	Indiv	15		6	5	178
Dr Ennis Hospital	Gen	Indiv	15		6	5	178
South Milwaukee 10706—Milwaukee	Gen	Indiv	14	6	53	6	231
South Milwaukee Hospital	Gen	Indiv	14	6	53	6	231
Sparta 4949—Monroe	Gen	Church	50	11	126	34	1 181
St Mary's Hospital	Gen	Church	50	11	126	34	1 181
Stanley 1988—Chippewa	Gen	NPA'sn	16	4	55	10	376
Victory Hospital	Gen	NPA'sn	16	4	55	10	376
Statesan 90—Waukesha	TB	State	240			220	112
Wisconsin State Sanatorium*	TB	State	240			220	112
Stevens Point 13623—Portage	TB	NPA'sn	51			50	62
River Pines Sanatorium	TB	NPA'sn	51			50	62
St Michael's Hospital	Gen	Church	110	15	151	49	1 517
Stoughton 4497—Dane	Gen	NPA'sn	20	8	111	12	478
Stoughton Community Hosp	Gen	NPA'sn	20	8	111	12	478
Sturgeon Bay 4983—Door	Gen	Indiv	20	5	70	11	553
Egeland Hospital	Gen	Indiv	20	5	70	11	553
Leamond Hospital	Gen	Indiv	15	4	48	9	351
Superior 36113—Douglas	Gen	Church	12	8	62	7	202
Good Samaritan Hospital	Gen	Church	12	8	62	7	202
St Francis Hospital	Gen	Church	50	10	12	32	616
St Mary's Hospital	Gen	Church	106	18	178	68	1 595
Tomah 3354—Monroe	Gen	I A	42	5	35	30	470
Tomah Indian Hospital	Gen	I A	42	5	35	30	470
Tomahawk 2919—Lincoln	Gen	Church	42	6	27	16	432
Sacred Heart Hospital	Gen	Church	42	6	27	16	432
Two Rivers 10053—Manitowoc	Gen	City	37	10	130	25	1 109
Two Rivers Municipal Hospital	Gen	City	37	10	130	25	1 109
Washburn 2238—Bayfield	Gen	NPA'sn	14	5	12	6	204
Washburn Hospital	Gen	NPA'sn	14	5	12	6	204
Watertown 10613—Jefferson	Gen	Church	50	9	167	34	1 189
St Mary's Hospital	Gen	Church	50	9	167	34	1 189
Waukesha 17716—Waukesha	IntMed	Corp	80			37	730
The Spa	IntMed	Corp	80			37	730
Waukesha Municipal Hospital	Gen	City	72	18	286	45	2 053
Waukesha Springs Sanitarium	N&M	Corp	40				61
Waupun 5768—Fond du Lac	Ment	State	204			271	65
Central State Hosp for Insane	Ment	State	204			271	65
Wausau 23758—Marathon	TB	County	66			65	85
Mount View Sanatorium	TB	County	66			65	85
St Mary's Hospital	Gen	Church	130	18	255	69	2 352
Wausau Memorial Hospital	Gen	NPA'sn	95	15	217	43	1 518
Wauwatosa 21194—Milwaukee	Unit of Muir	Muir					
Blue Mound Preventorium	Unit of Muir	Muir					
Milwaukee Asylum for Chronic Insane	Ment	County	1 484			1 529	191
Milwaukee County General Hospital	Gen	County	1 050	75	1 382	746	18 136
Milwaukee Hospital for Mental Diseases	Ment	County	920			949	487
Milwaukee Sanitarium	N&M	Corp	130			117	257
Muirale Sanatorium	TB	County	458			435	677
West Bend 4760—Washington	Gen	Church	25	8	65	15	534
St Joseph's Hospital	Gen	Church	25	8	65	15	534
West DePere 4300—Brown	TB	County	90			80	176
Hickory Grove Sanatorium	TB	County	90			80	176
Whitehall 915—Trempealeau	Gen	NPA'sn	26	4	41	14	575
Whitehall Community Hospital	Gen	NPA'sn	26	4	41	14	575
Whiteland 269—Manitowoc	TB	County	50			45	43
Maple Crest Sanatorium	TB	County	50			45	43
Winnebago 1,120—Winnebago	TB	County	95			89	125
Sunny View Sanatorium	TB	County	95			89	125
Winnebago State Hospital	Ment	State	870			773	782
Wisconsin Rapids 8726—Wood	Gen	NPA'sn	30	8	192	25	941
Riverview Hospital	Gen	NPA'sn	30	8	192	25	941

Related Institutions

Appleton 25067—Outagamie	Ment	County	183			184	15
Outagamie County Asylum for Chronic Insane	Ment	County	183			184	15
Barron 1863—Barron	Gen	Indiv	14	4	28	8	251
Barron City Hospital	Gen	Indiv	14	4	28	8	251

WISCONSIN—Continued

Related Institutions	Type of Service	Control	Beds Rated Capacity	Bassinets	Number of Births	Average Patients	Patients Admitted
Chippewa Falls 9539—Chippewa	Ment	County	271			268	50
Chippewa County Chronic Insane Asylum	Ment	County	271			268	50
Northern Wisconsin Colony and Training School	McDe	State	1 550			1 592	159
Dodgeville 1937—Iowa	Ment	County	145			139	10
Iowa County Insane Asylum	Ment	County	145			139	10
Douman 256—Waukesha	Inst	Frat	25			20	39
Wisconsin Masonic Home and O E S Hospital	Inst	Frat	25			20	39
Eau Claire 26287—Eau Claire	Ment	County	230			222	45
Eau Claire County Insane Asylum	Ment	County	230			222	45
Elkhorn 2340—Walworth	Ment	County	160			140	
Walworth County Hospital	Ment	County	160			140	
Ellsworth 1124—Pierce	Gen	Indiv	8	3	51		167
Ellsworth Hospital	Gen	Indiv	8	3	51		167
Fond du Lac 26449—Fond du Lac	Ment	County	266			263	28
Fond du Lac County Insane Asylum	Ment	County	266			263	28
Green Bay 37415—Brown	Ment	County	179			No data supplied	
Brown County Insane Asylum	Ment	County	179			No data supplied	
Wisconsin State Reformatory Hospital	Inst	State	30			6	267
Itasca 31—Douglas	Ment	County	208			197	94
Douglas County Asylum Home and Sanatorium	Ment	County	208			197	94
Parkland Sanatorium	Tuberculosis Unit of Douglas County						
Asylum Home and Sanatorium							
Janesville 21628—Rock	Ment	County	120	6	5	115	25
Rock County Hospital	Ment	County	120	6	5	115	25
Jefferson 2639—Jefferson	Ment	County	191			185	55
Jefferson County Asylum for Chronic Insane	Ment	County	191			185	55
Juneau 1154—Dodge	Ment	County	250			265	63
Dodge County Insane Asylum and Poor House	Ment	County	250			265	63
Kewaunee 2409—Kewaunee	Gen	Part	10	2	12	2	101
Dana and Dockry Hospital	Gen	Part	10	2	12	2	101
Lake Geneva 3073—Walworth	Conv	Corp				6	69
Crane Farms Sanatorium	Conv	Corp				6	69
Lake Tomahawk 60—Oneida	TB	State	40			41	95
Lake Tomahawk State Camp	TB	State	40			41	95
Lancaster 2432—Grant	Ment	County	250			255	19
Grant County Asylum	Ment	County	250			255	19
Madison 57899—Dane	Iso	City	52			30	543
East Washington Hospital	Iso	City	52			30	543
Manitowoc 22963—Manitowoc	Ment	County	200			198	16
Manitowoc County Insane Asylum	Ment	County	200			198	16
Marshfield 8778—Wood	Ment	County	225			224	20
Wood County Asylum for Chronic Insane	Ment	County	225			224	20
Menomonie 5595—Dunn	Ment	County	155			153	14
Dunn County Asylum	Ment	County	155			153	14
Milwaukee 578249—Milwaukee	Inc	Church	32			33	4
Layton Home	Inc	Church	32			33	4
Marquette University Eye Ear Nose and Throat Hospital	ENT	Corp	45			12	1 006
Monroe 5015—Green	Ment	County	200			180	54
Green County Asylum	Ment	County	200			180	54
Neillsville 2118—Clark	Gen	Indiv	16	4	20	6	194
Neillsville Hospital	Gen	Indiv	16	4	20	6	194
New Richmond 2112—St Croix	Ment	County	160			150	11
St Croix County Asylum for Chronic Insane	Ment	County	160			150	11
Niagara 2033—Marquette	Gen	NPA'sn	10	4		5	
Niagara Hospital	Gen	NPA'sn	10	4		5	
Oscoda 607—Polk	Gen	Indiv	8	2	9	5	192
Ladd Memorial Hospital	Gen	Indiv	8	2	9	5	192
Oshkosh 40105—Winnebago	N&M	Church	85			55	80
Alexian Brothers Hospital	N&M	Church	85			55	80
Owen 1102—Clark	Ment	County	328			307	55
Clark County Asylum	Ment	County	328			307	55
Peshigo 1579—Marquette	Ment	County	215			210	36
Marquette County Insane Asylum	Ment	County	215			210	36
Prairie du Chien 3943—Crawford	Gen	Indiv	15	6		New	
Beaumont Hospital	Gen	Indiv	15	6		New	
Racine 67542—Racine	Iso	City	48	4		34	470
Lincoln Memorial Hospital for Communicable Diseases	Iso	City	48	4		34	470
Racine County Asylum	Ment	County	260			254	65
Reedsburg 2967—Sauk	Ment	County	191			178	8
Sauk County Asylum	Ment	County	191			178	8
Richland Center 3632—Richland	Ment	County	142			131	7
Richland County Asylum for Chronic Insane	Ment	County	142			131	7
Shawano 4188—Shawano	Ment	County	170			180	21
Shawano County Insane Asylum	Ment	County	170			180	21
Sheboygan 39251—Sheboygan	Ment	County	206			199	25
Sheboygan County Asylum for Chronic Insane	Ment	County	206			199	25
Sparta 4949—Monroe	Ment	County	141			174	
Monroe County Insane Asylum	Ment	County	141			174	
Union Grove 755—Racine	McDe	State	768			755	79
Southern Wisconsin Colony and Training School	McDe	State	768			755	79
Verona 450—Dane	Ment	County	287			287	37
Dane County Asylum for Chronic Insane	Ment	County	287			287	37

Key to symbols and abbreviations is on page 798

WISCONSIN—Continued

Related Institutions	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Viroqua 2792—Vernon	Ment	County	128			120	3
Vernon County Asylum	Gen	Indiv	20	7	41	6	384
Viroqua Hospital							
Watertown 10613—Jefferson	MeDe	Church	370			361	34
Bethesda Lutheran Home for Feeble-minded and Epileptics							
Waukesha 17176—Waukesha	Ment	County	210			206	61
Waukesha County Asylum for Chronic Insane							
Wisconsin Industrial School for Boys	Inst	State	10			4	200
Waupaca 3131—Waupaca	Gen	NPA's'n	14			9	386
Waupaca Hospital and Clinic							
Waupun 5768—Fond du Lac	Gen	Part	7	4	48	4	171
Clark and Swartz Hospital	Inst	State	21			17	310
Wisconsin State Prison Hospital							
Wausau 2378—Marathon	Ment	County	100			200	20
Marathon County Asylum for Chronic Insane							
Marathon County Home and Hospital	Inst	County	50			46	160
Wauwatosa, 21194—Milwaukee	Inst	County	81			52	973
Milwaukee County Home for Children	Inc	Church	60			60	132
St Camillus Hospital							
Salvation Army Martha Washington Women's Home and Hospital	Mat	Church	50	30	110	43	131
West Bend 4760—Washington	Ment	County	100			140	20
Washington County Asylum for Chronic Insane							
West Salem 1011—La Crosse	Ment	County	260			209	23
La Crosse County Asylum for Insane							
Weyauwega 1067—Waupaca	Ment	County	200			177	14
Waupaca County Insane Asylum							
Whitehall 910—Trempealeau	Ment	County	147			130	11
Trempealeau County Asylum for Chronic Insane							
Winnebago 1120—Winnebago	Ment	County	249			243	24
Winnebago County Asylum							
Wyocena 490—Columbia	Ment	County	200			150	22
Columbia County Asylum							
Summary for Wisconsin							
	Number	Beds	Average Patients	Patients Admitted			
Hospitals and sanatorium	102	19,100	13,783	204,383			
Related institutions	63	11,096	10,096	7,489			
Totals	270	30,246	23,879	211,872			
Refused registration	10	744					

WYOMING

Hospitals and Sanatoriums	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Basin 903—Big Horn	TB	State	33			29	46
Wyoming Tuberculosis Sanatorium							
Burns 216—Laramie	Gen	Indiv	10	2	16	2	141
Burns Hospital							
Casper 10619—Natrona	Gen	County	69	10	203	50	1,771
Memorial Hospital of Natrona County							
Cheyenne 17361—Laramie	Gen	County	130	13	214	47	1,049
Memorial Hospital of Laramie County							
Veterans Admin Facility	Gen	Vet	108			101	903
Douglas 1917—Converse	Gen	Indiv	19	4	8	9	246
Douglas Hospital							
Evanston 3070—Uinta	Ment	State	507			527	110
Wyoming State Hospital							
Ft Warren 22—Laramie	Gen	Army	198	4	56	88	2,480
Station Hospital							
Ft Washable 62—Fremont	Gen	IA	30	6	30	10	488
Shoshone Indian Hospital							
Jackson 533—Teton	Gen	Church	20	4	21	7	482
St John's Hospital							
Kemmerer 1484—Lincoln	Gen	NPA's'n	30	0	No data supplied		
Lincoln County Miner's Hosp							
Lander 1096—Fremont	Gen	Church	20	6	0	10	440
Bi-hop Randall Hospital							
Lovell 185—Big Horn	Gen	Indiv	17	6	34	4	303
Lovell Hospital							
Midwest 212—Natrona	Gen	NPA's'n	21	3	14	6	198
Midwest Hospital							
Powell 1116—Park	Gen	Corp	20	4		8	
Whitlock Hospital							
Rock Springs 8440—Sweetwater	Gen	State	100	8	198	50	2,960
Wyoming General Hospital							
Sheridan 1036—Sheridan	Cen	County	0	12	170	50	1,406
Sheridan County Memorial Hospital							
Veterans Admin Facility	Ment	Vet	90			407	347
Wheatland 1097—Platte	Gen	NPA's'n	50		53	71	1,110
Wheatland General Hospital							

WYOMING—Continued

Related Institutions	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Basin 903—Big Horn	Gen	Corp	15	2	13	4	110
Basin Hospital							
Evanston 3070—Uinta	Cen	Indiv	10	3	4	4	172
Legion Memorial Hospital							
Gebo 894—Hot Springs	Gen	NPA's'n	8		16	2	70
Gebo Hospital							
Gillette 1340—Campbell	Gen	Part	16	6	30	6	200
Rooney Hospital							
Greybull 1806—Big Horn	Gen	Indiv	8	2	10	7	140
St Luke's Hospital							
Hanna 1483—Carbon	Gen	NPA's'n	11	2	21	3	104
Hanna Hospital							
Lander 1826—Fremont	MeDe	State	362			209	20
Wyoming State Training School							
Thermopolis 2129—Hot Springs	Gen	Indiv	30	6	34	11	260
General Hospital							
Worland 1461—Washable	Gen	Indiv	11	2	15	2	40
Dr Gray's Hospital							
Summary for Wyoming							
	Number	Beds	Average Patients	Patients Admitted			
Hospitals and sanatoriums	19	2,110	1,043	15,160			
Related in institutions	9	411	327	1,839			
Totals	28	2,521	1,370	16,999			
Refused registration	4	111					

ALASKA

Hospitals, Sanatoriums and Related Institutions	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Anchorage 2277	Gen	Fed	30	6	41	14	1,139
Anchorage Base Hospital							
Cordova 980	Gen	Indiv	20	3	24	10	203
Cordova General Hospital							
Fairbanks 2101	Gen	Church	60	4			
St Joseph's Hospital							
Ft Yukon 304	Gen	Church	40	2			
Hudson Stuck Memorial Hosp							
Haines 344	Gen	Army	16	1	2	6	97
Station Hospital							
Juneau 4043	Cen	Church	70	9	62	19	700
St Ann's Hospital							
U S Hospital for Natives	G & F B I A		53	4	36	49	422
Kanakanak 177	Gen	IA	13	1	4	6	82
Kanakanak Native Hospital							
Kennecott 217	Indus	Corp	16	1		3	61
Kennecott Copper Corporation Hospital							
Ketchikan 3786	Gen	Church	40	8	13	28	900
Ketchikan General Hospital							
Kotzebue 291	Gen	IA	16	3	16	11	169
Government Hosp for Natives							
Mountain Village 86	Gen	IA	22	2	7	16	176
U S Hospital for Natives							
Nome 1213	Gen	Church	20	5			
Maynard Columbus Hospital							
Petersburg 1207	Gen	City	8	3	18	3	163
Petersburg General Hospital							
Point Barrow 82	Gen	Church	12	3			
Presbyterian Hospital of Point Barrow							
Seward 830	Gen	Church	22	3	21	12	340
Seward General Hospital							
Sitka 1006	Inst	Ter	50		30	141	
Pioneers' Home Hospital							
Tanana 180	Gen	IA	30	1	11	20	104
Tanana Hospital							
Wrangell 948	Gen	Church	10	3	18	6	170
Bishop Rowe General Hospital							

CANAL ZONE

Hospitals, Sanatoriums and Related Institutions	Type of Service	Control	Beds, Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Ancon 1140	Gen	Fed	806	24	407	431	10,360
Gorgas Hospital							
Balboa 2902	Gen	Army	30		22	834	
Palo Seco Leper Colony	Lepro	Fed	110			106	4
Station Hospital							
Corozal 1790	Gen	Fed	50		290	243	
Corozal Hospital							
Station Hospital	Gen	Army	54		46	1,618	
Critobal 700	Gen	Fed	114	10	373	82	4,248
Colon Hospital							
Ft Randolph (Coco Solo P O) 724	Gen	Army	12			11	510
Station Hospital							
Ft Sherman 108	Gen	Army	50			23	1,071
Station Hospital							
France Field 64	Gen	Army	14			2	751
Station Hospital							
Gatun 2314	Gen	Army	67		3	89	1,002
Station Hospital							

GUAM

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Agaña							
Susana Hospital for Natives of Guam	Unit of U S Navy	Naval Hospital	92	17	108	99	2 978
U S Naval Hospital	Gen	Navy					

HAWAII

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Area 021—Honolulu							
Honolulu Plantation Hospital	Gen	Corp	40	4	19	18	634
Leele 312—Kauai							
McBryde Sugar Company Hosp	Gen	NPA'sn	38	4	40	26	714
Hakalau 22—Hawaii							
Hakalau Hospital	Gen	NPA'sn	20	4	22	10	314
Hilo 19468—Hawaii							
Hilo Memorial Hospital	Gen	County	120	16	194	97	2 001
Puumalle Home for Tuberculosis	TB	Ter	100			90	78
Honokaa 1069—Hawaii							
Honokaa Sugar Company and Pacific Sugar Mill Plantation Hospital	Indus	NPA'sn	20				
Honolulu 177 582—Honolulu							
Japanese Hospital	Gen	NPA'sn	120	3	43	50	1 923
Kahili Receiving Station	Lepro	Ter	200				
Kapiolani Maternity and Gynecological Hospital	GynMat	NPA'sn	50	36	687	27	1 063
Kauikoolani Children's Hosp	Chil	NPA'sn	70			38	1 887
Ieahu Home	TB	NPA'sn	440			405	330
Queen's Hospital	Gen	Corp	204	18	624	180	6 768
St. Francis Hospital	Gen	Church	60	10	129	37	1 362
Shriners Hospital for Crippled Children	Orth	Frat	28			28	86
Tripler General Hospital	Gen	Army	300	8	70	169	2 570
Hoolehua—Mau							
Robert W Shingle Jr. Memorial Hospital	Gen	Church	10	4	31	6	200
Kahuku 100—Honolulu							
Kahuku Plantation Company's Hospital	Gen	NPA'sn	28	3	64	17	728
Kalaupapa—Kalaupapa							
Kalaupapa Hospital	Lepro	Ter	50	6			
Kaneohe (Heeia P O) 112—Honolulu							
Territorial Hospital	Ment	Ter	707			764	200
Kealahou 350—Hawaii							
Kona County Hospital	Gen	County	70	6	27	12	311
Kealia 100—Kauai							
Kealia Hospital	Gen	Corp	20	4	49	14	350
Samuel Mahelona Memorial Hospital	TB	County	100			70	30
Kilauea 122—Kauai							
Kilauea Sugar Plantation Hospital	Gen	Corp	20	3	20	9	300
Kohala 720—Hawaii							
Kohala Hospital	Gen	County	37	3			
Koloa 1844—Kauai							
Koloa Sugar Company's Hosp	Gen	NPA'sn	26	3	27	11	401
Kula (Waiakoa P O) 22—Mau							
Mau County Farm and Sanit	G&TB	County	200	4	30	100	802
Iahaina 270—Mau							
Pioneer Mill Company's Hosp	Gen	Corp	57	9	130	41	1 002
Ilanai City—Mau							
Lanai Hospital	Gen	Corp	20	4	50	6	400
Iihue 2399—Kauai							
Lihue Hospital	Gen	Corp	50	6	20	24	866
Makaweli 94—Kauai							
Hawaiian Sugar Company's Hospital	Gen	Corp	37	6	40	10	660
Olaa 307—Hawaii							
Olaa Hospital	Gen	Corp	30	4			
Ookala 26—Hawaii							
Hospital of Kaiwika Sugar Co	Gen	NPA'sn	12	2	12	3	184
Paauihau 36—Hawaii							
Paauihau Plantation Co Hosp	Gen	Corp	10	2			
Paauihau 1233—Hawaii							
Paauihau Hospital	Gen	NPA'sn	16	3	16	7	324
Pahala 200—Hawaii							
Hawaiian Agricultural Company Hospital	Gen	Corp	19	3	81	11	600
Pala 1471—Mau							
Mau Agricultural Company's Hospital	Gen	Corp	103	10			
Pearl City 1071—Honolulu							
Waimano Home for Feeble-minded Persons	MeDe	Ter	209			221	8
Pearl Harbor 200—Honolulu							
U S Naval Hospital	Gen	Navy	262			138	1 600
Pepeekeo 520—Hawaii							
Pepeekeo Central Hospital	Gen	NPA'sn	38	4	110	30	1 078
Puunene 4080—Mau							
Puunene Hospital	Gen	NPA'sn	100	24	20	70	2 742
Shoefield Barracks (Honolulu P O) 4200—Honolulu							
Station Hospital	Gen	Army	300	12			
Wailuku 4311—Honolulu							
Wailuku Agricultural Co Hosp	Gen	NPA'sn	26	4	72	10	600

HAWAII—Continued

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Wailuku 6 998—Mau							
Wailuku Hospital	Gen	County	71	8	140	32	1 022
Waimanalo 1 008—Honolulu							
Waimanalo Hospital	Gen	NPA'sn	16				
Waima 2 091—Kauai							
Waima Hospital	Gen	NPA'sn	20	4	20	20	910
Waiohinu 100—Hawaii							
Kaunani Memorial Hospital	Gen	County	20	2			
Waipahu 5 874—Honolulu							
Waipahu Sugar Company Hospital	Gen	NPA'sn	57	6	71	31	1 145

PHILIPPINE ISLANDS

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Bacolod 19 000—Occidental Negroes							
Occidental Negroes Provincial Hospital	Gen	Gov't	77	4			
Provincial Maternity and Children's Hospital	MatCh	Gov't	60	18			
Bangulo 3 464—Benguet							
Bangulo Hospital	Gen	Gov't	67				
Station Hospital	Gen	Army	50	2	30	8	190
Barili 33 481—Cebu							
Hospicio de San Jose	Inc	Gov't	25				
Batangas 41 182—Batangas							
Batangas Provincial Hospital	Gen	Gov't	70				
Batangas Provincial Hospital	Gen	Gov't	20				
Binalagan Estate Hospital	Gen	Corp	10				
Bontoc 600—Mountain							
Bontoc Hospital	Gen	Gov't	50	5			
Butuan 9 790—Agusan							
Butuan Public Hospital	Gen	Gov't	24				
Cabanatuan 10 282—Nueva Ecija							
Nueva Ecija Provincial Hosp	Gen	Gov't	50	4	81	44	1 760
Cagayan 28 164—Misamis Oriental							
Cagayan Mission Hospital	Gen	Church	40	6			
Misamis Oriental Prov Hosp	Gen	Gov't	20		30	20	700
Calamba 18 062—Laguna							
Calamba Sugar Estate Hosp	Gen	Corp	24	1			
Caluyo 13 980—Capiz							
Capiz Provincial Hospital	Gen	Gov't	70	5			
Capiz 21 996—Capiz							
Emmanuel Hospital	Gen	Church	65	5	50	90	1 400
Cavite 22 163—Cavite							
U S Naval Hospital	Gen	Navy	185			120	1 401
Cebu 60 000—Cebu							
Cebu Central Clinic	Gen	Part	20	4	20	14	311
Cebu Maternity House	Mat	NPA'sn	50	27			
Chong Hoa Chinese Hospital	Gen	NPA'sn	20			4	100
Southern Islands Hospital	Gen	Gov't	110	6			
Corregidor—Cavite							
Station Hospital	Gen	Army	150	6	107	89	2 480
Cotabato 410—Cotabato							
Cotabato Public Hospital	Gen	Gov't	40	2	30	30	1 000
Cullon—Palawan							
Cullon Leprosy Colony Hospital	Lepro	Gov't	50	16	143	50	2 300
Emergency Hospital No 1	Unit of Cullon	Leprosy Colony Hospital					
Cuyo 14 766—Palawan							
Cuyo Hospital	Gen	Gov't	20				
Dagupan 22 612—Pangasinan							
Pangasinan Provincial Hosp	Gen	Gov't	50	10	18	7	1 000
Dansalan 5 988—Ilanai							
Lanao Public Hospital	Gen	Gov't	50				
Dapitan 12 860—Zamboanga							
Rizal Memorial Hospital	Gen	Gov't	50				
Davao 13 040—Davao							
Davao Mission Hospital	Gen	Church	40	1			
Davao Gov't Hospital	Gen	Gov't	60				
Del Carmen—Pampanga							
Del Carmen Hospital	Gen	NPA'sn	32	4	18	11	710
Dipolog 10 982—Zamboanga							
Dipolog Emergency Hospital	Gen	Gov't	12				
Dumaguete 16 227—Oriental Negro							
Dumaguete Mission Hospital	Gen	Church	60	6			
Fabrica 3 164—Occidental Negroes							
Iloilo Hospital	Gen	Corp	40		34	0	90
Ft. Stotenburg—Pampanga							
Station Hospital	Gen	Army	90	4	280	41	2 000
Ft. William McKinley—Rizal							
Station Hospital	Gen	Army	87			0	1 100
Guinayangan 4 000—Irayabas							
Philippine Lumber Company Hospital	Indus	Corp	10				
Iloilo 49 114—Iloilo							
Iloilo Mission Hospital	Gen	Church	70	10	94	42	1 400
St. Paul's Mission Hospital	Gen	Church	100				
Iteabela 2 281—Zamboanga							
Ilanai Lumber Hospital	Indus	Corp	24				
Iolo 3 780—Sulu							
Sulu Public Hospital	Gen	Gov't	46		42	21	600
Kabalan—Zamboanga							
Pathfinder Estate Hospital	Gen	NPA'sn	24		28	8	200
Kiangan 276—Iligao							
Kiangan Hospital	Gen	Gov't	10				

PHILIPPINE ISLANDS—Continued

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Kolambugan 1 900—Lanao	Gen	NPA n	24	2			
Kolambugan Ho pital							
Laos 28 469—Nicos Norte							
Sallice Long Read Memorial Hospital	Gen	Church	40	2			
Legaspi 52 756—Albay	Gen	Gov t	37	7			
Albay Provincial Hospital							
Millwaukee Hospital	Gen	Church	29	6	17	7	425
Los Banos 6 333—Laguna							
University of the Philippines	Gen	Gov t	20	2	10		201
Los Banos Infirmary							
Lubidagan 2 76—Kalinga	Gen	Gov t	8		3		350
Lubugan Public Hospital							
Lucena 11 909—Tayabas	Gen	Gov t	80	3		50	2 100
Tayabas Provincial Hospital							
Makati 12 410—Rizal	Gen	City	234				
City Sanatorium							
Malaybalay 9 868—Bukidnon	Gen	Gov t	16	1	10	21	326
Bukidnon Public Hospital							
Malolos 26 444—Bulacan	Gen	Gov t	30	6			
Bulacan Provincial Hospital							
Mandaue 21 461—Cebu							
Piersley Childs Treatment Station	Lepro	Gov t	780		3	670	307
Manila 28 306—Rizal							
Bilibid Hospital	Inst	Gov t	300				
Chinese Hospital	Gen	NPA n	150	18			
Hospital de San Juan de Dios	Gen	Church	239	12	1 719	204	
Mary Chiles Hospital	Gen	Church	60	10	100	28	1 652
Mary J Johnston Memorial Hospital	Gen	Church	96	24			
Maternity and Children's Ho p	MatCh	Gov t	79	35			
Philippine General Hospital	Gen	Gov t	663	64	4 132	515	19 923
St Joseph's Hospital	Gen	Indiv	70	8			
St Luke's Hospital	Gen	Church	120	10			
St Paul's Hospital	Gen	Church	100	12	191	40	1 706
St Theresia's Ho pital	Gen	Indiv	60	10			
San Lazaro Hospital	ThIs	Gov t	760		3	775	5 591
Sternberg General Hospital	Gen	Army	300	7	63	167	7 912
Margosatubig—Zamboanga							
Margosatubig Emergency Hosp	Gen	Gov t	18				
Mati 6 440—Davao							
Mati Emergency Hospital	Gen	Gov t	6				
Naga 9 396—Camarines Sur							
Naga Hospital	Gen	Gov t	22				
Olongapo—Zambales							
Carmilla Simpson Hospital	Gen	NPA n	17	8			
Pasay 18 823—Rizal							
Harrison Hospital	Gen	Indiv	20				
Mercy Hospital	Gen	Indiv	20	5			
Puerto Princesa 5 827—Palawan							
Puerto Princesa Ho pital	Gen	Gov t	16				
Sagada 167—Mountain							
St Mary the Virgin Dispensary and Hospital	Gen	Church	58	6			
San Fernando 19 885—La Union							
Bethany Hospital	Gen	Church	34	4	33	17	998
San Fernando 21 097—Pampanga							
Pampanga Provincial Hospital	Gen	Gov t	50	6			
San Jose—Antique							
Antique Provincial Ho pital	Gen	Gov t	16	7	5	13	267
San Juan del Monte 6 618—Rizal							
Manila Heights Hospital	Gen	Indiv	100				248
San Miguel 18 147—Bulacan							
Fludia Memorial Hospital	Gen	City	10	2	11	2	206
San Pablo 31 214—Laguna							
San Pablo Hospital	Gen	City	20				
San Pedro 4 184—Rizal							
Hospital Espanol de Santiago	Gen	NPA n	40	10			
San Roque—Cavite							
San Ramon Maternity and Children's Hospital	MatCh	Indiv	14	10			
Santa Barbara 9 017—Hilo							
We tern Visayas Treatment Station	Lepro	Gov t	200			200	100
Santa Cruz 14 131—Laguna							
Laguna Provincial Hospital	Gen	Gov t	50	10	24	20	800
Santol—Rizal							
Santol Tuberculosis Sanat	TB	NPA n	201			200	824
Silay 23 06—Occidental Negros							
Silay Maternity and Children's Hospital	Gen	City	21	6			
Sorogon 17 609—Sorogon							
Sorogon Provincial Ho pital	Gen	Gov t	14	1	12	10	379
Tecloran 14 4—Icyte							
Bethany Ho pital	Gen	Church	34	1	8	8	490
Icyte Provincial Ho pital	Gen	Gov t	21	2			
Tagbilaran 12 70—Bohol							
Bohol Provincial Ho pital	Gen	Gov t	5	1			
Triclycerian Union Ho pital	Gen	Church	20	4	23	13	1 141
Tanauan 190 4—Leyte							
Maternity Ho pital	Gen	NPA n	10	6	16	3	173
Tarlac 2 88—Tarlac							
Tarlac Provincial Ho pital	Gen	Gov t	20	2			
Uman 17 61—Hoco Sur							
Hocos Sur Provincial Ho pital	Gen	Gov t	9				
Philippine Christian Institute Ho pital	Gen	Church	50	5			
Zamboanga 6 6—Zamboanga							
Ho pital	Gen	Church	20	3			
San Panay Island Ho pital	Gen	Gov t	40		12	2	706
Station Ho pital	Gen	Army	10				
Zamboanga General Ho pital	Gen	Gov t	80	8	84	3	2 143

PUERTO RICO

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Aguadilla 10 902—Aguadilla							
Ho pital Municipal	Gen	City	24	4			
Ana co 3 064—Aguadilla							
Municipal Hospital of Ana co	Gen	City	16	3			
Baramon 12 084—San Juan							
Ho pital Municipal de Bayamon	Gen	City	50				
Cabo Rojo 4 603—Mayaguez							
Hospital Municipal	Gen	City	16				
Cayey 9 93—Guayama							
Clinica Dr Villeneuve	Gen	Indiv	18	6			
Fajardo 7 82—Humacao							
Luis Manuel Hospital	Gen	City	32	4	294	80	1 378
Guayama 10 903—Guayama							
Hospital de Tuberculosis	TB	Gov t	100				New
Gurabo 3 468—Humacao							
Municipal Ho pital	Gen	City	20	4			
Hato Rey—San Juan							
Clinical Dr M Julia	N&M	Indiv	120			100	140
Humacao 7 937—Humacao							
Ryder Memorial Hospital	Gen	Church	50	10	107	38	1 123
Juana Diaz 2 466—Ponce							
Hospital Municipal	Gen	City	42	3	60	37	887
Juncos 5 237—Humacao							
Hospital Municipal	Gen	City	18				
Lares 3 049—Aguadilla							
Clinica San Jo e	Gen	Indiv	8	2			
Lares Municipal Hospital	Gen	City	28				
Las Piedras 1 335—Humacao							
Las Piedras Municipal Hosp	Gen	City	16				
Lolita 1 606—Humacao							
Lolita Municipal Hospital	Gen	City	18				
Manati 7 443—Arecibo							
Hospital Municipal Manati	Gen	City	25				
Maunabo 1 117—Guayama							
Hospital San Jo e	Gen	City	9	2			
Mayaguez 37 060—Mayaguez							
Clinica Betances	Gen	Indiv	70	10	3	27	242
Mayaguez and Western Poly clinic	Gen	Indiv	70				
Mayaguez Sanatorium	Gen	Part	30				
Naguabo 4 087—Humacao							
Municipal Hospital	Gen	City	16	1			
Ponce 7 3430—Ponce							
Clinica Quirurgica del Dr Pila	Gen	Indiv	120	18			
Ho pital Municipal Valentin Tricocche	Gen	City	20	13	240	4	280
St Luke's Memorial Ho pital	Gen	Church	60	6	61	90	1 207
Santo Asilo de Damas Hosp	Gen	Church	110				
Quebradilla 1 700—Aguadilla							
Ho pital Municipal de Quebradillas	Gen	City	12			2	70
Rio Piedras 1 408—San Juan							
Insular Leper Colony	Lepro	Gov t	90			63	60
Psychiatric Ho pital of Puerto Rico	Ment	Gov t	1 000				998 392
Sanatorio de la Sociedad Espanola de Auxilio Mutuo y Beneficencia de Puerto Rico	Gen	Frat	150	13	50	78	1 311
Salinas 9 22—Guayama							
Hospital de Salinas	Gen	City	40	5	75	22	738
San Juan 114 710—San Juan							
Capital City Hospitals	Gen	City	325	40			
Children's Ho pital	Unit of Capital City Hospitals						
Hospital de la Penitenciaría	InstTB	Gov t	38	20			
Maternity Ho pital	Unit of Capital City Hospitals						
Mediano Hospital	Unit of Capital City Hospitals						
Mental and Chronic Ho pital	Unit of Capital City Hospitals						
Pre tylerian Hospital	Gen	Church	84	20	190	68	1 654
Puerto Rico Sanatorium	Gen	Indiv	16	16	173	8	472
Quarantine Hospital	Iso	Gov t	50			1	433
Station Ho pital	Gen	Army	50	4	22	40	707
Surgical Hospital							
University Ho pital of the School of Tropical Medicine	Gen	Gov t	50			35	567
Santurce—San Juan							
Hospital Mimya	Gen	Indiv	100	12	09	60	800
Santa Rosa Clinic	Gen	NPA n	10	2			
Vega Baja 4 784—Arecibo							
Vega Baja Municipal Hospital	Gen	City	30	0	20	20	341
Yabucoa 3 641—Humacao							
Yabucoa City Ho pital	Gen	City	24	2	56	27	927
Yauco 8 607—Mayaguez							
Clinica FI Amparo	Gen	Indiv	22			5	88
Yauco Ho pital	Gen	City	30				

VIRGIN ISLANDS

Hospitals Sanatoriums and Related Institutions	Type of Service	Control	Beds Rated Capacity	Basinets	Number of Births	Average Patients	Patients Admitted
Christiansted 3 7—St Croix Island							
Christiansted Municipal Ho p	Gen	City	50	8	82	41	807
Richmond Ho pital	Gen	City	55			43	10
St Croix Ho pital for Leprosy	Lepro	City	50			8	8
Frederiksted 2 6—St Croix Island							
Frederiksted Municipal Ho p	Gen	City	60	8	80	34	900
St Thomas 7 00—St Thomas Island							
Municipal Ho pital	Gen	City	90	10			

Key to symbols and abbreviations is on page 798

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SATURDAY, MARCH 7, 1936

HOSPITAL SERVICE FOR THE AMERICAN PEOPLE

The fifteenth annual presentation of hospital data in this issue of *THE JOURNAL* provides facts about hospital service. Returns have come from 96 per cent of all the registered hospitals in the United States, representing around 99 per cent of the bed capacity. Appreciation is here tendered to hospital superintendents and other officials, to members of staffs and to officials of county and state medical societies and others who have made the annual census successful.

Hospitals have made an average gain of more than 25,000 beds a year for twenty-six years. Over 7,700,000 persons, not including new-born infants, were admitted as bed patients during 1935. Ninety per cent of all admissions were in general hospitals. Three fourths of the 200,000 idle beds in the country are in general hospitals. Confronted with these figures, all of which are conservative, can any one doubt the importance of the hospital as an adjunct to the practice of medicine? Will any one fail to see the significance of 769,660 babies born in the hospitals and a total of 320,000,000 patient days during the year? The operation of hospitals is one of America's major enterprises.

The three divisions or types of organizations controlling hospitals are nonprofit organizations, organizations for profit, and governmental agencies. The patronage of the nonprofit hospitals, although charging full or part cost when feasible and usually not subsidized, increased 7.5 per cent during the year 1935 as against an increase of 2.7 per cent in county and city hospitals and in proprietary hospitals and 5.8 per cent in governmental hospitals. The nonprofit organizations cared for nearly 60 per cent of all patients admitted to hospitals, the remaining 40 per cent going to governmental agencies and organizations for profit. Nonprofit hospitals, numbering 2,640, are composed mainly of general hospitals distributed over the entire country and each serving a more or less definite community. To this group go most of the acute cases of sickness and injury. Most of them are general hospitals. They

accommodate the private patients of a majority of physicians. They are training places for most of the resident physicians, interns, medical students and nurses. These organizations therefore deserve support from the public, the profession and philanthropists. The nonprofit voluntary organization, whether independent corporation, church or other type of nonprofit association, must continue, increase and improve, with the support of the whole people.

The development of hospitals as educational institutions is introducing new problems into hospital administration and control. Occasionally public hospitals are exploited as institutions for postgraduate study without any attempt to demand adequate fundamental training or certification of prerequisite knowledge of those who take the postgraduate study. Hospital administrators must determine whether or not their main educational function is education of the undergraduate, education of the intern or postgraduate training. Moreover, the rights of the patient are paramount to any educational function.

IVAN PETROVITCH PAVLOV

On February 27 Prof Ivan Petrovitch Pavlov died at the age of 87 years. Dr Pavlov was the most prominent character in science and medicine in Russia of the past generation. In his passing the medical profession of the world mourns the loss of a congenial and brilliant colleague, whose contributions to scientific medicine will ever be a cherished heritage.

Son of a Russian priest, educated in the schools of Leningrad, he early betook himself to the laboratories of the leaders of physiologic research in Germany, the workshops of Ludwig and Heidenham. In the laboratory of Heidenham, Pavlov received the stimulus to research on the function of the alimentary canal. His contributions, particularly on the role of the nervous system in gastric and pancreatic functions, were of great significance. This work gained him the Nobel prize in physiology and medicine in 1904.¹ The essentials of Pavlov's investigations in this field have stood the test of time and the results stand as a milestone in this field of physiology and medicine.

During the last thirty years Pavlov was engaged in developing a new method of investigation of the central nervous system, the method of "conditioned reflexes."² Conditioned reflexes differ from the inherited reflexes in the sense that the former are the sequelae of individual experience. Following the lead of Pavlov, investigators have employed the conditioned reflex method extensively in the study of learning in all types of animals, from fishes to man. The method appears applicable in earliest childhood as well as in various conditions of the disturbances of the central nervous system in man and in animals. The possibility of this

¹ The Work of the Digestive Glands translated by W. H. Thomson 1902

² Conditioned Reflexes translated by Prof. G. V. Anrep Oxford University Press 1927

method in the analysis of disorders of the central nervous system in man still lies mainly before us. As in the case of Pavlov's work on the digestive glands, the essentials of his contributions by the method of conditioned reflexes have stood the test of repetition. Of course, many facts and many interpretations have been challenged by other workers and require further study.

Professor Pavlov twice visited this country—first in 1923, and again at the meeting of the International Congress of Physiologists in Boston ten years ago. In the winter of 1935 he had a severe attack of pneumonia but recovered and was able to take part in the International Neurological Congress in London last July. He was president of the International Physiological Congress meeting in Leningrad and Moscow last August. At this congress he was given many tokens of high honor and personal regard by his fellow countrymen³ and the thousand colleagues from other parts of the world. The present generation of physiologists and medical investigators in Russia is made up mainly of the pupils of Pavlov.

Professor Pavlov was a man of tremendous industry and enthusiasm in medical research, in poverty and in prosperity, fearless and uncompromising, but, with all, displaying the true democracy of science. He could laugh at his own folly as well as at the folly of his fellow men. He was deeply troubled by the misfortunes of his colleagues in his own and other countries in the present generation.

SURGEON GENERAL HUGH S. CUMMING RETIRES

On January 28 President Franklin D. Roosevelt sent the following letter to Surgeon General Hugh S. Cumming of the United States Public Health Service:

It was with great regret that I learned that the state of your health would no longer permit you to bear the heavy strain of your work as Surgeon General of the Public Health Service and that Secretary Morgenthau had therefore given approval to the findings of a medical board convened at your request, which recommended that you be placed on waiting orders as of February first.

Your release from active duty marks the rounding out of a career in the public service which the American people can view with pride and admiration because of the honor you have brought to them as their faithful servant and benefactor. You yourself may view it with the most thorough satisfaction in a task well done.

I am happy to recall that your labors in protecting humanity against disease and in advancing health standards everywhere have brought you deserved recognition and honor not only in your own country but throughout the world.

I am privileged to express to you the gratitude of the Nation and to add my own thanks for the great service you have rendered.

The action followed the report of a board of medical officers, which indicated that the physical condition of Dr. Cumming no longer permitted him to bear the heavy burdens of his office. The announcement of his

retirement brought messages of appreciation of his services from leaders in statesmanship and in public health throughout the world.

Dr. Cumming was the fifth Surgeon General of the United States Public Health Service. He was born Aug. 17, 1869, at Hampton, Va., and, after graduation in medicine from the University of Virginia in 1893, entered the Public Health Service as assistant surgeon in 1894. Between that time and February 1920, when he was first appointed Surgeon General, he served notably at Ellis Island in San Francisco and abroad, acquiring extended knowledge of the medical aspects of the immigration question and also intimate knowledge of the details of public health and sanitation. During the World War he was detailed to the Navy as adviser in sanitation and later served in Europe as president of the interallied sanitary commission to Poland. He has represented the United States in innumerable foreign conferences on health matters and is a member of the permanent committee of the Office international d'hygiène publique, and of the health committee of the League of Nations. His distinguished career has been recognized by the decorations of Commander of the Legion of Honor of France, Commander Poland Restituta of Poland, Order Al Merito of Ecuador, Order of Carlos Finlay of Cuba, and Order of El Sol of Peru.

Space does not permit a listing of the unusual accomplishments of the United States Public Health Service during Dr. Cumming's administration. It is important to realize, however, that he was renominated to office by each succeeding President since 1920 and that his entire term of service embraces forty-two years, during sixteen of which he was Surgeon General.

The work of the Surgeon General of the United States Public Health Service gives him control of a department that must ever be in intimate contact with the medical profession. As a leader of that service Dr. Cumming showed always a sympathetic insight into the problems of the practicing physician and an earnest desire to be of the utmost assistance in working out those problems, so as to maintain the high quality of medical service rendered to the people by the American medical profession. In his appearances before numerous governmental commissions and legislative bodies he spoke always in behalf of the highest ideals. He recognized, however, the great responsibility which the medical profession bears to the public in rendering its service. Thus he said in concluding one of his best addresses on this subject:

From time immemorial the medical profession has been regarded as the natural sponsor not only of individual but also of community health. Legal provisions relating to standards of medical education and privilege of the practice of medicine rest on this foundation. Whether this service in future shall be rendered by the profession in cooperation with health authorities or be made incumbent on the legal health representatives must depend on the character of the service rendered by the profession. It should be the object of the organized profession to impress on each individual physician his responsibility in this matter.

³The Russian government had built a splendid new research laboratory and a comfortable home for Pavlov on a charming country site a few miles out of Leningrad.

Dr Hugh S Cumming retired on January 31, leaving for what should be a long and happy period of recreation following his arduous and distinguished work

Current Comment

PROGRESS IN TRAINING OF INTERNS

The hospital internship has long been an accepted institution. Nearly every graduate takes a year or more of intern training whether it is required or not. The internship essentially is an educational experience. It is the fifth year in the study of medicine. The intern in his four years in medical school has been subject to a routine of class work, laboratory and the lecture room, with periodic examinations. In his fifth year, educational responsibility is shifted to the hospital. It is still an educational year. The hospital now assumes the role of an educational institution—a school. Staff physicians are the teachers. The patient-physician-intern relationship should prove a benefit to each member of the trio and to the hospital management as well. The hospital field has been covered by visits of inspection. Much study has been made of best methods and traditions in the training of interns. Much aid has been given, particularly to the newer and smaller hospitals that train interns, with the result that there are now 708 hospitals approved for intern training, each being marked by a star in the list of registered hospitals appearing in this issue. These furnish a total of about 6,500 approved internships. Interest in intern training is greater now than at any time since the Council published its first approved list in 1914. In addition to the Council's activities, the internship is receiving special attention and study in both large and small centers. The special study of approved internships in New York City is described in one of the contributed articles of this issue. During the present year the Council on Medical Education and Hospitals will pursue its study of the internships with increased zeal, and its staff of examiners expects to revisit not less than 500 hospitals approved for internship.

RESIDENCIES IN SPECIALTIES

One or more educational years of hospital experience following the internship is becoming more and more common. The increased use of hospitals for medical practice makes more hospital jobs for physicians. There is increasing desire for more experience and greater skill before entering independent practice. To help both the hospitals and young graduates, the Council has developed a list of hospitals approved for residencies in specialties. This was first issued in 1927 with 270 hospitals and 1,699 residencies. In the list of hospitals appearing elsewhere in this issue there are 405 hospitals approved for residencies in specialties, indicated by a plus sign. They provide for 2,600 residencies. A residency in a hospital is not of itself

preparation for the practice of a specialty. It may be a proper step in that direction. Whether the erstwhile intern pursues additional hospital years as further preparation for general practice or as a step toward specialization, each year of additional service in an approved hospital is credited in the biographic file of the American Medical Association. Approved internships are likewise credited. Residencies in specialties are of special importance at this time, when certification of specialists is being rapidly developed through the formation of special examining boards, which will determine by an examination the fitness of the candidate to practice his specialty. The public and the profession may then know by turning to the American Medical Directory or other sources of information physicians who have been found to qualify in the practice of their specialty. Ten boards have already been formed and two additional ones are in the making. Five boards have been approved by the Council on Medical Education and Hospitals, one has been tentatively approved and three additional ones have applied. The combined efforts of these boards, the staffs of teaching hospitals, the Council and others will be required to develop residencies that will give the training needed toward meriting the qualifying certificate of a specialty examining board.

Association News

ABSTRACT OF MINUTES OF MEETING OF BOARD OF TRUSTEES HELD AT THE PALMER HOUSE, IN CHICAGO, FEB 20 AND 21, 1936

LEGISLATION

The Board went on record as offering no objection to the principles embodied in bill H R 10586 to provide for the more adequate protection of the revenue, a more effective enforcement of the revenue and other laws administered by the Treasury Department and for other purposes, with the understanding that the consolidation proposed in the amended bill would maintain the integrity of the Bureau of Narcotics and the functions of the Commissioner of Narcotics in an independent unit and that the medical profession would not be placed under the direct surveillance of the Secret Service Division of the Treasury Department as such.

S 3744 and its companion bill H R 10385, to amend the act creating the Federal Trade Commission, to define its powers and duties and for other purposes, the purpose of which is to enlarge the powers and the authority of the Federal Trade Commission, was approved.

Concerning H J Res 449, which proposes to authorize the Secretary of Labor to appoint a board of inquiry to make a prompt and thorough investigation of all facts relating to health conditions of workers employed in the construction and maintenance of public utilities, the Board voted to endorse action that will limit the study of problems in regard to industrial medicine to the United States Public Health Service and medical agencies.

It opposed H R 10632 to amend the act entitled "An Act to amend and consolidate the Acts respecting copyright," which would divest the publisher of control of copyrights and vest them in the author."

REQUESTS FOR SPECIAL SESSION OF HOUSE OF DELEGATES

Consideration was given to requests for the calling of a special session of the House of Delegates, even though they were not made as prescribed by the By-Laws, and in view of

the fact that the Kansas City Session is imminent, being less than ten weeks away, the Board deemed it inexpedient to call a special session prior to that time

INVITATION TO SEND REPRESENTATIVES TO MEETING OF BRITISH MEDICAL ASSOCIATION

The Board voted to accept the invitation from the British Medical Association to send representatives to its meeting to be held in Oxford, July 21-24

APPROPRIATIONS

Appropriations were made for the conduct of the work of the several councils, bureaus and committees as well as for the continuance of scientific and therapeutic research, also for the purchase of presses and other machinery to replace equipment that is worn out and to provide additional much needed facilities for handling the work in the headquarters office

PARTICIPATION IN EXPOSITION IN SAN DIEGO, CALIF., AND IN DALLAS TEXAS

The Board approved of the preparation of exhibits by the Bureau of Educational and Scientific Exhibits for the expositions in San Diego and Dallas

DR FRANK J CLANCY SUCCEEDS DR ARTHUR J CRAMP AS DIRECTOR OF BUREAU OF INVESTIGATION

Approval was given to the employment of Dr Frank J Clancy of Seattle as director of the Bureau of Investigation, to succeed Dr Arthur J Cramp, who retired November 1 because of ill health

ELECTIONS

To fill vacancies caused by expiration of terms, resignations and deaths, the following appointments were made: Council on Pharmacy and Chemistry—Dr Torald Sollmann to succeed himself, Dr W C Rose, Urbana, Ill to succeed Dr Lafayette B Mendel (deceased), and Dr E M K Geiling, Baltimore, to succeed Dr Reid Hunt (resigned). No appointment was made to fill Dr L G Rowntree's place at present, it being decided that the work of the Council could be conducted with one less member. Council on Physical Therapy—Drs Robert B Osgood, F J Gaenslen and Howard T Karsner to succeed themselves. Committee on Foods—Dr Russell M Wilder to succeed himself, and Dr Martha Eliot, Washington, D C, to succeed Dr Lafayette B Mendel (deceased). To expedite work of this committee, it was decided to make its secretary a member of the committee. *Archives of Internal Medicine*—Dr Arthur Bloomfield, *Archives of Ophthalmology*—Dr Arnold Knapp, *Archives of Neurology and Psychiatry*—Dr H Douglas Singer, *Archives of Otolaryngology*—Dr Ralph A Genton, *Archives of Pathology*—Dr Frank R Menne—all to succeed themselves. *Archives of Dermatology and Syphilology*—Dr Howard Fox of New York to succeed Dr Charles J White. *Archives of Surgery*—Dr William Darrach to succeed himself, and Dr Waltman Walters, Rochester, Minn, to succeed Dr E Starr Judd (deceased). Committee for the Protection of Medical Research—Drs Lewis H Weed and Walter Cannon to succeed themselves. Committee on Scientific Research—Dr Ludwig Hektoen to succeed himself.

The resignation of Dr Victor C Jacobsen from the editorial board of the *Archives of Pathology* was received and it was decided not to fill his place

MISCELLANEOUS BUSINESS

Numerous other matters received careful attention, and many of these will be reported on at a later date

RADIO BROADCASTS

The American Medical Association broadcasts over WEAF the Red network instead of the Blue as formerly and certain additional stations of the National Broadcasting Company at 5 p m eastern standard time (4 o'clock central standard time, 3 o'clock mountain time 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of Medical Emergencies and How They Are Met. The title of the program is Your Health. The program is recognizable by a musical salutation through which the voice of the announcer offers the toast 'Ladies and gentlemen your health'. The theme of the program is repeated each week in the opening announcement which informs the listener

that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast

Red Network—The stations on the Red network of the National Broadcasting Company are WEAF, WEEL, WTIC, WJAR, WTAG, WCSH, KYW, WFBR, WRC, WGY, WBEN, WCAE, WTAM, WWJ, WMAQ, KSD, WHO, WOW, WDAF

Pacific Network—The stations on the Pacific network are KGO, KPO, KFI, KGW, KOMO, KHQ, KFSD, KTAR

Network programs are broadcast locally or rejected at the discretion of the local station. The lists indicate stations to which programs are available

The next three programs are as follows

March 10 Hard of Hearing Morris Fishbein M D
March 17 Eyesight Saving W W Bauer M D
March 24 Hay Fever and Asthma Morris Fishbein M D

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

CALIFORNIA

Society News—Dr Hans Lissner, San Francisco, addressed a joint meeting of the Los Angeles Society of Neurology and Psychiatry and the Endocrine Study Club of Los Angeles, February 19, on "Adrenal Cortical Syndromes with a Consideration of Cushing's Disease and Arrhenoblastoma."—At a meeting of the Los Angeles Society of Ophthalmology and Otolaryngology, February 18, Dr Harry S Gradle, Chicago, discussed "Surgery of Retinal Detachment. End Results of Various Methods."

COLORADO

Society News—The Larimer County Medical Society was addressed in January in Fort Collins by Drs Roy P Forbes and Osgood S Philpott, Denver, on "Common Errors Made in Pediatric Diagnosis" and "Commonly Missed Dermatologic Diagnoses," respectively.—At a meeting of the Northeast Colorado Medical Society, January 29, a symposium on cancer of the female genital tract was presented by Drs Lyman W Mason, Sanford M Withers and Charles B Kingry, Denver.—Dr Henry M Powell, Colorado Springs, addressed a joint meeting of the El Paso County Medical Society and the staffs of the various hospitals in Colorado Springs January 15, on peptic ulcer.

GEORGIA

Health at Atlanta—Telegraphic reports to the U S Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended February 22, indicate that the highest mortality rate (24.4) appears for Atlanta and the rate for the group of cities as a whole, 14. The mortality rate for Atlanta for the corresponding period last year was 16.8 and for the group of cities, 12.1. The annual rate for eighty-six cities for the eight weeks of 1936 was 13.5 as against a rate of 12.9 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

ILLINOIS

Society News—Dr Martin F Engman, St Louis, discussed the subject of eczema before the Madison County Medical Society, Granite City, February 7.—At a meeting of the Kankakee County Medical Society in Kankakee, February 20, Dr Kellogg Speed, Chicago, discussed skull fractures.—Dr Leon Unger, Chicago, among others, addressed the Will Grundy Medical Society, February 19, on "Recent Advances in the Study of Allergic Conditions."—Dr Isaac A Abt, Chicago, discussed "Management of the Infant During the First Three Months of Life" before the Decatur Medical Society, February 18.

Chicago

Correction—Clinical Meeting—The Institute of Traumatic Surgery will hold an all day clinical session at St Luke's Hospital, March 13, instead of March 15, as announced in THE JOURNAL, February 29

Lectures on Mental Hygiene—The Illinois Society for Mental Hygiene is sponsoring a series of lectures at Fullerton Hall, Art Institute. Dr Charles F Read, Elgin gave the first in the series February 19, on 'Modern Hospital Care of the Mentally Ill,' Dr Abraham A Low, the second, February 26, 'A Common Form of Mental Disease Dementia Praecox (Schizophrenia),' and Dr Low, the third March 4 'A Common Form of Mental Disease Manic-Depressive Psychosis' Other speakers will be

Dr David B Rotman March 11 Mental Illness in Old Age

Dr Fred Temple Burling March 18 Nervousness

Dr Rotman March 25 Alcohol and Mental Disease

Society News—The Chicago Medical Society was addressed, March 4, by Drs Ralph M Waters, Madison, Wis, and John S Lundy, Rochester, Minn, on anesthesia—At a meeting of the Chicago Society of Internal Medicine, February 24 Dr Edmund Jacobson among others, spoke on 'The Influence of Skeletal Muscle Tension on Blood Pressure'—Dr Russell D Herrold discussed 'Environmental Altered Gonococcal Forms and the Probable Mechanism of Cure in Gonorrhea' among other speakers before the Chicago Urological Society, February 27—The Chicago Laryngological and Otolological Society was addressed March 2 by Dr Louis Z Fishman on 'Bilateral Spastic Adductor or Flaccid Abductor Paralysis of the Larynx—Experimental Interpretation,' and Clarence Simon, Ph D professor of speech reeducation, Northwestern University, 'Functional Disorders of Speech and Their Correction'—Dr Earl R Carlson, New York, addressed a joint meeting of the Jane A Neil Club and the Chicago Orthopaedic Society, March 4, on 'Treatment of the Spastic Child'

IOWA

Physician Honored—Dr Jennie May Coleman received the Des Moines Tribune community service cup for 1935 at a ceremony, February 14. The ceremony was broadcast over radio station KSO with Basil L Walters, managing editor of the *Register* and *Tribune* introducing Dr Coleman. The physician is 67 years of age and a graduate of the State University of Iowa College of Homeopathic Medicine, class of 1898.

Society News—Dr Carlo S Scuderi, Chicago, addressed the Scott County Medical Society, January 7 in Davenport on 'Injuries of the Vertebral Column'—Dr Charles A Elliott, Chicago, discussed 'Management of Hepatic Disease' before the Woodbury County Medical Society in Sioux City, January 8—Dr Irving F Stein, Chicago addressed a joint meeting of the Grimes Study Club and Des Moines Academy of Medicine in Des Moines, January 25 on 'Gynecologic Diagnosis with the Aid of Pneumoroentgenography and Hysterosalpingography', in the morning Dr Stein conducted a clinic.

KENTUCKY

Society News—Dr Frank M Stites Jr, Louisville, addressed the Christian County Medical Society Hopkinsville, January 21, on hypertensive heart disease—Speakers at a meeting of the Bourbon County Medical Society, Paris, January 16 were Drs Arthur B Barrett, Lexington on 'Significance of Pulse, Temperature and Blood Pressure in Obstetric Complications' Eugene H Hyden, Auer, 'Inhibition in Prostatic Hypertrophy,' and Eugene L D Blake, Paris 'Significance of Sedimentation Tests'—A symposium on treatment of peptic ulcer was presented at a meeting of the Jefferson County Medical Society, Louisville, February 17 by Drs Chauncey W Dowden, Frank A Simon and Irvin Abell. Speakers in a symposium on hypertension, February 3 were Drs Woodford B Troutman, Frank M Stites Jr, Frank W Pirkey, Louisville and Garland L Dyer, Buechel.

MARYLAND

Dr Williams Honored—A testimonial dinner was given in honor of Dr Huntington Williams health commissioner of Baltimore, January 22, by more than 200 Baltimore physicians and officers of the Baltimore Association of Commerce at the Southern Hotel. Dr John M T Finney, professor emeritus of surgery, Johns Hopkins University School of Medicine was toastmaster. Speakers at the dinner included Mayor Jackson, Drs Thomas S Cullen who was honorary chairman, Charles C W Judd, Allen W Freeman, Baltimore and Reginald M Atwater, New York, secretary of the American Public Health Association. Dr Williams has been commissioner of health of Baltimore since 1932, when he succeeded the late Dr C Hamp-

son Jones. The previous year he resigned as secretary of the New York State Department of Health, Albany, to become director of health of Baltimore.

MASSACHUSETTS

Bills Introduced—H 1097, to amend the dental practice act, proposes to prohibit registered dentists and dental hygienists from advertising "in any newspaper or by radio, display sign or by means of show cases, containing the representation of a tooth, teeth, dental restoration of any kind or of whatsoever design or description of any portion of the human head or neck or photograph of any person, in any other manner whatsoever." H 1528, to amend those provisions of the medical practice act relating to the educational qualifications of applicants, proposes: (1) to require applicants to possess the educational qualifications required for graduation from a public high school, (2) to have attended courses of instruction for four years of not less than thirty-two school weeks in each year, or course which, in the opinion of the board, are equivalent thereto, in one or more legally chartered medical schools and (3) to have received the degree of doctor of medicine or its equivalent from legally chartered medical schools having the power to confer degrees in medicine and, if chartered under the laws of any other state than Massachusetts, approved by the board.

MICHIGAN

Arts and Craft Exhibition—The third annual exhibition of arts and crafts under the auspices of the art committee of the woman's auxiliary to the Wayne County Medical Society will be held March 8-13. Physicians and members of their families are eligible to exhibit their work.

MINNESOTA

Dr Lyon Will Retire as Dean—Dr Elias P Lyon, since 1913 professor of physiology and dean of the University of Minnesota School of Medicine, will retire from the faculty June 30. Dr Lyon, who is 68 years of age, received the honorary degree of doctor of medicine from St Louis University in 1910. He taught at Hillsdale College, Harvard School, Chicago, and Bradley Polytechnic Institute, Peoria, Ill. He became assistant professor at Rush Medical College in 1900. This position he held until 1904, carrying concurrent appointments of assistant professor of physiology and assistant dean at the University of Chicago from 1901 to 1904. He was professor of physiology at St Louis University School of Medicine from 1904 to 1913 and dean from 1907 to 1913. In the latter year he went to the University of Minnesota School of Medicine as professor of physiology and dean. Dr Lyon was president of the Association of American Medical Colleges in 1913.

MISSISSIPPI

Society News—At a meeting of the Coahoma County Medical Society and the staff of Clarksdale Hospital in Clarksdale, January 8, Dr William H Brandon, Clarksdale, discussed hypotension, among other speakers—Dr Guy C Jarrett, Vicksburg, read a paper before the Homochitto Valley Medical Society in Natchez, January 8, entitled 'Pyuria in Children'—Among others, Dr James S McLester, Birmingham, Ala. President, American Medical Association addressed the North Mississippi Medical Society, January 15 in New Albany, on 'Deficiency Syndrome in America'—The Issaquena-Sharkey-Warren Counties Medical Society devoted its meeting, January 14 to a discussion of medical economic speakers were Drs Winston C Pool and Henry S Goodman Cary, and William K Purks, Willard H Parsons, Leon Lippincott and Edley H Jones all of Vicksburg.

MISSOURI

Dr Cannon Gives First Loeb Lecture—Dr Walter B Cannon, George Higginson professor of physiology, Harvard Medical School, Boston delivered the first Leo Loeb Lecture at Washington University School of Medicine, March 2. His address was entitled 'Some Adventures in Discovery.'

Society News—A joint meeting of the Jackson and Wyandotte County medical societies in Kansas City was addressed February 11 by Dr Wheelan D Sutliff, Chicago, who discussed 'Cases of Pneumococcus Infection Illustrating Pneumothorax Therapy, Oxygen Therapy and the Spontaneous Development of Immunity'—A symposium on urologic diagnosis was presented before the St Louis Medical Society, February 11 by Drs John F Patton, James M Macmillan, Elmer E Sexton and James A O Dowd. Speakers February 4 were Drs Vilray P Blair and Duff S Allen on 'Periductal Infections and Lateral Aberrant Thyroid' respectively.

NEW JERSEY

Bill Introduced—A 416, to amend the laws relating to the practice of the healing art, proposes to require the board of medical examiners to issue a license to practice osteopathy to any licensed chiropractor in New Jersey who possesses an unrevoked license to practice osteopathy in another state or in the District of Columbia. The scope of the license to practice osteopathy to be issued to such a practitioner is to be equivalent to the scope of the license to practice osteopathy on the basis of which his license to practice osteopathy in New Jersey is issued.

NEW YORK

Bills Introduced—S 1063, to amend the medical practice act, proposes that notwithstanding any other provisions of that act, a graduate of a medical school or college registered and maintaining at the time a standing satisfactory to the education department, who has been licensed in a foreign state or country on written examination, may have his foreign license endorsed without examination and be licensed to practice medicine in New York. S 1065, to amend the medical practice act, proposes to make it a ground for the revocation of a license for a physician to advertise for patronage by means of handbills, posters, circulars, letters, stereopticon slides, motion pictures, radio or newspapers. S 1083 and A 1356 propose to appropriate \$100,000 to the department of labor to be used for the prevention of silicosis and other dust diseases. S 1084 and A 1355, to amend the workmen's compensation act, propose to restrict, within the limits set out in the bill, the compensation and medical treatment for which an employer is liable under that act, to a worker partially or totally disabled from silicosis or other dust diseases. A 1445 proposes that the provisions of the pharmacy practice act shall not apply to the manufacture of proprietary medicines except such as are poisonous, deleterious and/or habit forming.

New York City

Society News—Dr Alexander W. Jacobs addressed the Bronx Gynecological and Obstetrical Society, February 24, on "Radiation Therapy in Gynecology."—Drs Louis J. Ferrara and Joseph Lozner addressed the Bronx Pathological Society, February 18, on 'Present Concept of Jaundice'.—At a meeting of the International Spanish Speaking Association of Physicians, Dentists and Pharmacists, February 21, a program on surgical, medical and dental motion picture films was presented. Dr Jacob M. Gershberg was recently reelected president of this association.—Speakers before the Medical Society of the County of Queens, February 25, were Drs Charles C. Wolferth, Philadelphia, on 'The Present Status of Electrocardiography in the Study of Coronary Arteriosclerosis and Its Complications'; Irving R. Roth, 'Prognosis of the Various Types of Heart Disease'; and Daniel Porte, 'Newer Methods of Treatment of Diseases of the Heart'.—Dr Benjamin Koven gave the society's Friday afternoon lecture March 6 on 'Painful Feet'.—Dr William P. Murphy, Boston, addressed the National Society for the Advancement of Gastro-Enterology, February 25, presenting 'An Analysis of the Complications in a Series of Patients with Pernicious Anemia with Special Consideration of the Digestive System,' and Dr Leon Schiff, Cincinnati, on 'Jaundice'.—Dr George W. Crile, Cleveland, addressed the New York Cardiological Society, February 26 on 'The Genesis and Operative Treatment of Essential Hypertension'.—Drs Leo M. Davidoff and Raphael Kurzrok addressed the New York Endocrinological Society, February 26 on 'Pituitary Tumors' and 'Clinical Value of Sex Hormone Tests' respectively.—Dr Percy Klingenstein addressed the New York Surgical Society, February 26, on 'Problems in the Surgical Management of Gastric Ulcer'.

NORTH CAROLINA

University News—Dr Alfred Blalock, Nashville, Tenn., delivered lectures on "Shock and Lymphatic Obstruction" at Duke University School of Medicine, January 30-31. Dr Charles L. Strosnider, Goldsboro, president-elect of the Medical Society of North Carolina, spoke, January 23, on 'Organized Medicine and Medical Ethics'.

OHIO

Dr Huston Honored—The Montgomery County Medical Society gave a dinner at the Biltmore Hotel, Dayton, January 24, in honor of Dr Edwin M. Huston, Dayton, president-elect of the Ohio State Medical Association. Dr Harold F. Koppe, president of the county society, presided and speakers were Drs. Huston, Claud N. Chrisman and Walter M. Simpson. Flowers and a volume containing signatures of the guests were presented to Dr. Huston.

PENNSYLVANIA

Personal—Dr Francis S. Chambers has resigned as chief surgeon of the State Hospital for Crippled Children, Elizabethtown, it is reported.—Dr David Moore Davis, Broughton, was honored by a testimonial dinner given by the community, January 28, in recognition of his thirty-five years of service.

Philadelphia

Medical Forum Lectures—The second lecture in the Medical Forum in the auditorium of the Philadelphia County Medical Society will be delivered by Dr Cornelius P. Rhoads of the Rockefeller Institute for Medical Research, New York, March 13, on "The Newer Knowledge of Blood Diseases." Dr Walter C. Alvarez, Rochester, Minn., will give the third lecture, April 24, on "The Emergence of Modern Medicine from Ancient Folkways."

Symposium on Cancer—Nine physicians will present a symposium on cancer before the Philadelphia County Medical Society, March 11. Various aspects of the disease will be discussed by Drs. Stanley P. Remann, whose subject will be pathology, George E. Pfahler, x-ray treatment, Frank C. Knowles, the skin, George M. Dorrance, the mouth, John Stewart Rodman, the breast, George P. Muller, the chest, Damon B. Pfeiffer, the gastrointestinal tract, Leon Herman, the genito-urinary tract, and Collier F. Martin, the rectum.

RHODE ISLAND

Bills Introduced—S 76 proposes to create a board of examiners in naturopathy and to enact a naturopathic practice act. The bill defines the practice of the "profession" of naturopathy, "as non medical and drugless" and as a science "dealing with the diagnosis and treatment of disease through natural therapeutics." It is to "embrace and include physiological, mechanical and dietetic sciences, such as mechanotherapy, electrotherapy, use of diet and herbs including powdered and dehydrated foods and fruits, and other methods as taught in the various recognized schools of naturopathy, excepting, however, surgery and the prescription of compounded drugs." H 714, to amend the chiroprody practice act, proposes (1) to define chiroprody or podiatry as the "diagnosis of foot and leg ailments, the dressing, padding and strapping of the foot, the making of plaster models of the feet and legs and the palliative medical, surgical, manipulative, electrical and mechanical treatment of functional disturbances of the feet and legs as taught and practiced in the schools of chiroprody, recognized by the examining board" and (2) to permit licentiates to practice chiroprody in all its branches pertaining to foot and leg ailments as taught and practiced in the schools or colleges of chiroprody, not including however, the amputation of the feet or the use of any anesthetic other than local.

SOUTH CAROLINA

Bill Introduced—S 1310 to amend the dental practice act, proposes to make it additional grounds for the revocation of a license to practice dentistry for a licentiate to employ 'cappers' or 'steerers' to obtain business to obtain any fee by fraud or misrepresentation, to betray wilfully a professional secret, to employ directly or indirectly any student or any suspended or unlicensed dentist to perform operations of any kind to use any advertising statements of a character tending to deceive or mislead the public to advertise professional superiority or the performance of professional services in a superior manner to advertise prices for professional services, to advertise by means of large display, glaring light signs, or any sign containing as a part thereof the representation of a tooth, teeth, bridgework or any portion of the human head to employ or use advertising solicitors or free publicity press agents, to advertise any free dental work or dental examination, or to advertise to guarantee any dental service or to perform any dental operation painlessly.

TEXAS

Personal—Dr David T. Bundy, Tyler, was recently named health officer of Smith County, succeeding the late Dr Benjamin T. Bryant.—Dr Wiley C. Morrow, Greenville, has been appointed to the state board of medical examiners to succeed the late Dr Herman H. Blankmeyer, Aransas Pass.

Medical Assembly in San Antonio—Dr Roy T. Goodwin, San Antonio, was elected president of the Southwest Texas District Medical Society (fifth and sixth districts of the state medical association) at the International Post Graduate Medical Assembly sponsored by the society in San Antonio, January 28-31. Speakers at the meeting included Drs. Hiram Winnett

Orr, Lincoln, Neb., Edward H. Richardson, Baltimore, Nathaniel G. Alcock, Iowa City, Burt R. Kirklin, Rochester, Minn., Abraham Cantarow, Philadelphia, David P. Barr and Alexis F. Hartmann, St. Louis, John R. Hume and Edward William Alton Ochsner, New Orleans, Clement L. Martin, Chicago, Francisco de P. Miranda and Teofilo Ortiz y Ramirez, Mexico City.

UTAH

Annual Registration Due April 1—All practitioners of medicine and surgery licensed to practice in Utah are required to register annually on or before April 1 with the department of registration and to pay a fee of \$3. If a licentiate fails to reregister within from ninety days to six months after April 1, his license can be revoked, and if revoked it will be reinstated only on his paying the delinquent registration fees and an additional year's fee as a penalty.

WASHINGTON

Microscope Stolen—Dr. Willard F. Goff, Seattle, reports that his comparatively new Spencer microscope was stolen from King County Hospital, Seattle, in the few days preceding February 23. The instrument is number 120478, is black with chromium trimmings, and has a black cloth cover and a yellow wooden case with a nickel handle. It has three objectives (including a fluorite oil immersion) and a mechanical stage with graduations. Dr. Goff's name is on the book of directions and on the bottom of the case. The substage mirror is missing and a black metal substage was also taken.

WYOMING

Annual Registration Due April 1—All practitioners of medicine and surgery licensed to practice in Wyoming are required by law to register on or before April 1 with the secretary of the Board of Medical Examiners and to pay a fee of \$2.50. If a licentiate fails to pay the fee within three months after April 1, his license can be annulled and if annulled it will be reinstated only on his paying the stated fee, plus \$5 as a penalty.

GENERAL

Licenses Lost—Drs. Vincent Edward and Grace St. Clair Wagner, San Dimas, Calif., report that on a recent shopping tour their California medical licenses issued to them Aug. 11, 1927, were left on a store counter. Their medical diplomas issued May 11, 1927, by the University of California Medical School also were lost.

Surgical Congress—The seventh annual assembly of the Southeastern Surgical Congress will be held at the Roosevelt Hotel, New Orleans, March 9-11. In addition to clinics and round table discussions, there will be addresses by the following physicians, among others:

Arthur W. Allen and Henry F. Howe, Boston. Calcified Mesenteric Glands. Their Relationship to Abdominal Pain.
Roger Anderson, Seattle. Fractures of the Shaft of the Femur. An Ambulatory Method.
Guy A. Caldwell, Shreveport. Surgical Measures for Prevention of Gas Gangrene.
George W. Crile, Cleveland. Malignant Hypertension.
Roger G. Doughty, Columbia, S. C. Use of the Time Factor in Peritonitis.
Chevalier Jackson, Philadelphia. Tumors of the Trachea with Special Reference to General Surgical Phases.
James S. McLester, Birmingham. Nutritive Failure as a Cause of Vague Ill Health.
Alan C. Woods, Baltimore. Ocular Manifestations of Intracranial Tumor.

"Cancer Research Aid Fund"—A letter describing an "association for the purpose of financially assisting cancer hospitals, cancer clinics and cancer research stations" has recently been sent to numerous hospitals, universities and research organizations. The letter, which bears the signature of one Maylar Greenfield as "managing director," asks the recipient to file a detailed statement of activities, financial requirements and purposes for which funds are used. On filing this information the institution will become a member of the proposed association, the letter says. A research organization in New York turned one of these letters over to the Better Business Bureau which after investigation reported that Mr. Greenfield had not been available personally at any time. In telephone conversations he had said that he had no definite plans as yet, that he knew nothing about cancer, that the idea was his own and that he could not give any further information. When asked if he had promoted other things he replied that he had but would give no details. He is not listed in the New York telephone directory but has desk room in the office of an interior decorator at 570 Seventh Avenue according to the report.

Medical Bills in Congress—*Bills Introduced* H. J. Res. 505, introduced by Representative White, Idaho, proposes that the Civil Service Commission shall not disapprove the application of any person for examination for medical officer in the Indian Service solely on the ground that such application was filed more than twenty years after graduation from a medical school. H. R. 11505, introduced by Representative Disney, Oklahoma, and H. R. 11525, introduced by Representative McGroarty, California, propose to grant retirement pay to disabled emergency officers at the rate paid them on March 19, 1933, if the disability resulted from disease or injury or aggravation of a preexisting disease or injury incurred in service and directly resulting from the performance of duty. H. R. 11452, introduced by Representative Doughton, South Carolina, proposes, among other things, to abolish the Bureau of Narcotics and to create in the Secret Service Division of the Treasury Department a Section of Narcotics. The bill provides for the appointment of a deputy, to be known as the Commissioner of Narcotics, to be in charge of the section. It expressly provides that the following functions shall be continued to be performed by the Commissioner of Narcotics: (1) All functions performed under treaties to which the United States is a party, so far as such functions require communication or cooperation with foreign governments, (2) all functions relating to cooperation with the states and relating to the development of treaties, with regard to the supervision and control of the traffic in narcotic drugs, and (3) the functions of supervising the legitimate traffic in narcotic drugs.

Bequests and Donations—The following gifts have recently been announced:

Woodstock Public Hospital, Woodstock, Ill. \$50,000 under the will of the late Mrs. Jeannie Lee Bentley.
Lankenau Hospital, Philadelphia. \$5,000 from the late Mrs. Josephine Eckert, \$3,000 by the will of the late Caroline Lachenmayer.
Lenox Hill Hospital, New York. \$15,000 by the will of Mrs. Anna Thalmann.
Frisbie Memorial Hospital, Rochester, N. H., \$10,000 worth of x-ray equipment, the gift of former Governor and Mrs. Huntley L. Spaulding, Rochester.
Pennsylvania Hospital, Philadelphia, \$54,369, the residuary estate of Mrs. Hattie Grace Copp. The fund is to be used for research in memory of Mrs. Copp and her husband Dr. Owen Copp who was for several years superintendent and medical director of the Pennsylvania Hospital for the Insane.
Pennsylvania and Protestant Episcopal hospitals, Philadelphia. \$5,000 each by the will of the late Mrs. Anna M. Moorhead.
Hahnemann Medical College and Hospital, Philadelphia. \$750,000 by the will of Mrs. Ada Norton Jamison to endow rooms and beds in memory of her parents, also River Crest Preventorium, Mont. Clare, Pa., \$10,000.
Bryn Mawr Hospital, Bryn Mawr, Pa., \$5,000 by the will of Albert L. Baily, Haverford.
Mount Sinai Hospital, Philadelphia. \$100,000 from the residuary estate of the late Anthony A. Schwartz after the death of the beneficiaries of three trust funds.
Ossining Hospital, Ossining, N. Y. \$2,000 by the will of Mary Goss Young.
Jewish Hospital of Brooklyn. \$5,000 by the will of Simon Frank Rothschild.
Memorial Hospital, New York. \$5,000 by the will of the late Miss Emeline Roach.
House of Rest at Sprain Ridge, Yonkers, N. Y. \$5,000 by the will of Benjamin Welles.
Jefferson Hospital, Philadelphia. \$10,000 under the will of Edward I. Smith, Jr.
University of Cincinnati College of Medicine, \$12,500 added to the David May Fund. \$5,000 anonymously given for the department of surgery. \$450 from Dean Alfred Friedlander for the Friedlander Fund in internal medicine. \$300 for the Eleanor C. U. Alms Fund.
Elyria Memorial Hospital, Elyria, Ohio. \$50,000 given by David L. and Arthur E. Johnson, Cleveland as a memorial to their parents.

FOREIGN

Deaths in Other Countries

Dr. Charles Jean Henri Nicolle, director of the Pasteur Institute of Tunis, Tunisia, since 1903, died February 28, aged 69. Dr. Nicolle was born in Rouen, France, studied medicine at the University of Paris and worked under the late Emile Roux at the Pasteur Institute. He was made a professor at the Rouen Medical College in 1893 and in 1896 founded the bacteriology laboratory there. In 1928 he received the Nobel prize in medicine for his research on typhus, notably the discovery that the disease is transmitted by lice in clothes. It was as a result of his discovery that delousing was made a part of army operations during the World War. Other research for which Nicolle was noted included work on the use of convalescent serum in treatment of typhoid and measles, on cholera, trachoma, relapsing fever, undulant fever, cattle plague, leishmaniasis, scarlet fever and German measles.

Prof. Ivan Petrovitch Pavlov, famed physiologist, died in Moscow, February 27, of a form of grip, according to Associated Press dispatches. Born Sept. 14, 1849, the son of a village priest in the district of Ryazan, Pavlov was educated at the University of St. Petersburg and the Military Medical

Academy in St Petersburg, now Leningrad. In 1890 he was appointed director of the department of physiology at the Institute of Experimental Medicine in St Petersburg and in 1897 professor at the Military Medical Academy. Under the Soviet rule Pavlov received special favors from the government, many of which he refused to accept, insisting that he would live in the same manner as other scientists. When he was 85 the government gave him a pension of 20,000 rubles a year, and a fund of a million rubles was made available for extensions of his laboratory in Leningrad. Pavlov's best known work was that on conditioned reflexes, which is considered to have opened the way for new schools of physiology and psychology. He was many times honored for his achievements. In 1904 he received the Nobel prize in medicine for his research on the salivary glands. He was a foreign member of the Royal Society of England and an honorary fellow of the Royal College of Physicians. In the summer of 1935 he served as president of the fifteenth International Physiological Congress at its meeting in Moscow. Pavlov visited the United States twice, first in 1923 as the guest of friends in New Haven, Conn., and in 1929 as the guest of the thirteenth International Physiological Congress, which met in Boston.

Government Services

Retirement of Captain Bell

Capt William H. Bell retired from the medical corps of the U. S. Navy, January 1, on his own application, with the rank of rear admiral. Admiral Bell was born in Wisconsin in 1873. He graduated from the University of Pennsylvania Medical Department in 1897 and was appointed an assistant surgeon in the navy in 1898. Advancing through the various grades of the service, Admiral Bell was the first editor of the U. S. Medical Bulletin when it was established in 1907 and has been head of the division of preventive medicine in the bureau of medicine and surgery. From 1932 to 1934 he was in command of the Naval Medical School.

Examination for Appointment to Public Health Service

The U. S. Public Health Service announces an examination to be held April 13 for entrance into the regular corps of the service in the grade of assistant surgeon (medical only). Applicants must not have passed their thirty-second birthday. They must be graduates of a reputable medical college and must have completed at least one year of internship or its equivalent since graduation. Boards will be appointed in various cities so as to cause as little travel as possible, and travel is at the candidate's expense. The examination will consume about a week. Compensation of officers in the grade of assistant surgeon is \$3,158 a year with dependents and \$2,699 without dependents. Persons wishing to take this examination should request the necessary blanks and information from the Surgeon General, U. S. Public Health Service, Washington, D. C.

Course for Reserve Medical and Dental Officers

The fourth annual medical military refresher course for reserve medical and dental officers of the army, navy and national guard will be held at the University of Michigan, Ann Arbor, April 12-25. Reserve officers living in Michigan, Illinois and Wisconsin on application to their respective commanders may obtain orders to attend this inactive duty school and officers in Ohio, Indiana, Kentucky and West Virginia are invited to attend. The morning hours during the two weeks will be occupied in ward walks, observation of surgical operations, clinical conferences and demonstrations in internal medicine, general surgery and oral and dental surgery. Medical officers will be required to elect either internal medicine or surgery as their clinical field of study in medical school and the University Hospital. The dental officers will follow a course arranged by the school of dentistry and the section on oral surgery at the hospital. The afternoon and evening periods will include lectures and demonstrations on clinical subjects pertinent to civilian practice but also of military importance, military information of value to medical and dental officers and other general discussions by members of the faculties of the university and officers in the reserve and regular services of the army and navy. All inquiries should be directed through military channels.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan 25, 1936

The Treatment of Paralytic Ileus

Mr Sampson Handley devoted his presidential address before the Section of Surgery of the Royal Society of Medicine to the treatment of paralytic ileus in acute appendicitis, a subject on which he has done original work. He holds that these cases are amenable to timely and energetic treatment, based on a study of the pathology of peritonitis. He pointed out that so-called general peritonitis is rarely universal, even at the time of death. Peritonitis begins in the pelvis even when the septic focus, such as a pinhole duodenal perforation, is high in the abdomen, and still more in infections arising lower down, such as appendicitis. Unless adhesions form, the infective matter drains rapidly into the pelvis. Thus only limited spread occurs round the original focus, but an intense inflammation arises in the rectovesical pouch, to which the septic products are led. The pelvis fills with pus from below upward. Thence the pus gradually rises into the hypogastric region, and hypogastric rigidity appears. When the peritonitic flood reaches the umbilicus, intestinal paralysis kills the patient. An important consequence of this floodlike invasion of the peritoneal cavity is that the stomach, jejunum and transverse colon remain uninfamed and unparalyzed until the patient is moribund. This is the key to successful treatment.

There are thus three clinical stages of so-called general peritonitis: (1) pelvic peritonitis, (2) hypogastric peritonitis and (3) the hopeless "clinical picture" or textbook stage. In pelvic peritonitis, acute rectal and vaginal tenderness, with edematous thickening of the rectovesical fold and uterosacral ligaments, are found on pelvic examination. There is hypogastric distention and tenderness, and perhaps vomiting, but there is no hypogastric rigidity, though there may be iliac rigidity. If the appendix is pelvic it may be felt as a definite swelling. The patient's life depends on recognizing the next stage, that of hypogastric peritonitis, which is characterized by the supervention of hypogastric rigidity and immobility on the previous hypogastric distention. It is assumed that pelvic drainage has already been done at the appendectomy. Above the umbilicus the abdomen is flat or only slightly distended, still soft and only moderately tender. On palpation a resonant rounded swelling almost as definite in its upper outline as the distended bladder and reaching to the umbilical level, can be felt in the hypogastric region. It is formed by distended coils of small intestine. Mr Handley calls it the "hypogastric football." Soon the supra-umbilical region though remaining soft and retaining some movement begins to share in the distention and the stretching of its muscles may be mistaken for genuine rigidity. Vomiting is vigorous and copious and at first is not offensive. Though obstruction is evidently present, small quantities of flatus may be passed. The hypogastric stage is short, lasting perhaps twenty-four hours. In the third or textbook stage of general peritonitis, rigidity is present above as well as below the umbilicus.

Intestinal paralysis may arise in the pelvic stage. Then only the pelvic intestine—a length of pelvic ileum, and later not invariably and sometimes incompletely, a length of pelvic colon—is paralyzed. In 1910 Mr Handley described this condition as ileus duplex to emphasize the fact of the two obstructions. He showed that successful treatment depended on recognizing this and performing ileoceco-tomy and cecostomy. Intestinal paralysis may not supervene until the hypogastric stage. The operative problem is then different for longer and less defined tracts of both large and small intestine are involved in the

paralysis When the "hypogastric football" is palpable the time is short, but it may be assumed that paralysis has not involved the stomach, jejunum and transverse colon Here are the materials for constructing a short but complete alimentary canal above the level of the peritonitic flood A distended coil of jejunum is anastomosed to the transverse colon, and the secum is opened Reflux occurs from the anastomosis along the transverse and ascending colon to the cecostomy Within twenty-four hours the almost moribund patient with paralytic ileus is transformed, free discharge occurs, and the abdomen becomes soft and flaccid

Mr Handley holds that enterostomy is not a rational operation for cases of combined obstruction of the lower part of the small intestine and of the lower part of the large unless the latter obstruction is likely to pass off spontaneously in a day or two Spontaneous and sufficiently prompt recovery of the large intestine is unlikely in the grave streptococcal infections of appendicitis Enterostomy drains only the small intestine The obstructed large intestine is prevented by the ileocecal valve from emptying into the small intestine In spite of the enterostomy the patient dies from toxic absorption from the distended large intestine Cecostomy is necessary for drainage of the large intestine It has been objected that the ileotransverse colostomy recommended by Mr Handley is a long and difficult operation involving great strain on the vital resources, but that depends on the technic Only two inches of large and 2 inches of small intestine need be exposed or extracted and local anesthesia usually is sufficient Cecostomy is also performed under local anesthesia and a large rubber catheter is tied into the cecum

The King's Last Illness

The country is shocked by the death of the king after a short illness He attained the age of 70 last June and seemed to be in his usual health up to January 15 when he was out and rode on his pony On the 16th he showed signs of mild bronchial catarrh and on the 17th a serious bulletin was issued by his physicians stating that while the catarrh was not severe there had appeared "signs of cardiac weakness which must be regarded with some disquiet" On the 18th the cardiac weakness and embarrassment of the circulation was slightly increased On the 19th it was announced that in spite of a restless night he had maintained his strength On the 20th the bulletin issued at 10 45 a m stated that he had had a more restful night but that there was no substantial change in his condition At 5 30 p m 'diminishing strength' and at 9 25 'the king's life is moving peacefully toward its close' were announced He died at 11 55

It was the cardiac weakness that proved fatal and this was but a culmination of loss of cardiac reserve In 1928 he had a serious illness—streptococcal septicemia with pleurisy, which terminated in empyema, requiring rib resection He slowly recovered It is suggested that this illness which placed a heavy burden on the heart may have had a casual relation to the last illness It is said to be a remarkable achievement that he should have recovered from the septicemia and reigned for seven years through eventful times

Physical Education in the Schools

A circular has been issued by the board of education to local authorities stating that physical education must have regard not only to the requirements of the school child but also to the wants of those leaving school who will be no less in need of healthy exercise and games There should be a daily period of organized physical activity in every school For girls dancing may on occasion be substituted for games or swimming Taking the country as a whole organized provision for the physical education of youth falls far short of the requirements but any imitation of the centralized methods of some continental

countries is considered altogether inappropriate On grounds of general health there is a strong case for helping the unemployed to maintain and develop their physique More gymnasiums are required if the physical education of young people, employed or unemployed, is to be developed as it should be

The main directions in which our system of physical education calls for improvement are summarized as follows 1 A more complete organization of physical education through the appointment in every area of an adequate number of competent full time or part time men and women organizers, who can advise teachers and help to develop the provision of physical activities 2 A larger output of teachers competent to give gymnasium training also an increase in the number of courses for teachers 3 More thorough organization to enable young people no longer attending school to receive physical education

The Fellowship of Medicine for Postgraduate Education

In an editorial the *Postgraduate Medical Journal* gives an interesting retrospect of the work of the Fellowship of Medicine Until the beginning of the century, organized graduate teaching was almost nonexistent in this country Since the early nineties, certain institutions in London, such as the West London Postgraduate College and the Medical Graduates College and Polyclinic, had been doing valuable work, but they could not make available more than a fraction of the rich and varied medical material of the metropolis To remedy this the Postgraduate Medical Association was founded twenty-five years ago, mainly at the instigation of Osler The war brought its activities to a standstill Immediately after the armistice the presence of many colleagues from overseas, on their way home from the front, gave rise to the Fellowship of Medicine to facilitate "intercommunication in all subjects of professional interest" and the promotion 'of mutual hospitality between fellows and with the dominions and overseas and foreign visitors' In 1919 this new organization was united with the Postgraduate Medical Association under the title of their conjoined names But this title was too cumbersome and the first part was dropped, leaving only the title 'Fellowship of Medicine' From small beginnings the Fellowship of Medicine has grown in influence The number of students annually enrolled has risen from 100 in the years 1919-1923 to nearly 700 in 1935, of which nearly two-thirds are from the British Isles and one third from the British empire overseas

The activities of the fellowship are directed by an executive committee, which is constantly receiving suggestions both from students and from teachers and is thus able to make the fullest use of the available facilities for the varying requirements In the first days of the fellowship, interest was limited to the arranging of lectures and visits to the teaching hospitals But in the teaching hospitals, i e, the medical schools, preference must be given to the undergraduates Therefore use was made of the enormous wealth of clinical material in the nonteaching hospitals, by enlisting the help of their physicians and surgeons and coordinating the hours of visits As no other British center has such a profusion of special hospitals, these were turned to account Thus it was possible to arrange special courses of instruction in diseases of the lungs heart, skin, urology, proctology and diseases of children The increased number of men who desire to take higher qualifications and who require advanced instruction for the examinations next engaged attention For these courses of lectures, lecture-demonstrations, clinical meetings and finally tutorial classes were arranged chiefly during the evenings so that they could be attended by men engaged in practice during the day The increased demand from the general practitioner for instruction and his inability to visit London frequently over a prolonged period led to the institution of short and intensive week end courses Debates

have also been held on topical subjects, such as tonsillectomy, medicine versus surgery in the treatment of peptic ulcer, and maternal mortality

PARIS

(From Our Regular Correspondent)

Jan 24, 1936

A New Conception of Mumps

Polynuritis following mumps is rather rare, hardly twenty cases have been reported. Drs Lamache and Dutrey add four carefully investigated observations which they presented before the Societe medicale des hopitaux. The first patient was a policeman, who had a complex neuritic syndrome, first located in the crural nerve and very painful as a consequence of a primitive meningitis, the onset of which appeared five days before the mumps. The neuritis in its first stages went to make up the picture of the paresthetic meralgia of Roth and then extended to the lower limbs. The second case was a neuritis of the polynuritic type which occurred ten days after the parotitis. One case was a meningoradiculitis, very painful, which occurred three days before the onset of mumps. Another case occurred two days after the mumps in the form of meningo encephalitis with hemiparesis in a child aged 7 years. These cases suggest to the authors the following comment. The first stage of the neurotic complications of parotiditis is as a rule a very painful neuralgia. The motor symptoms come later most often as paresis. Every part of the nervous system may be related and often many parts at a time. The evolution is favorable. Do not those cases tend to confirm the recent conception, initiated by Bezangon and Philibert, that mumps is secondary to the meningo encephalitic symptoms and the swelling of the parotid glands the consequence and not the cause of the ailment?

A Method of Embalming

In the *Revue de pathologie comparee* Dr S. Icard sets forth a simple and inexpensive technic for embalming, without any mutilation of the body. It can be applied to the provisional preservation of bodies for any purpose. The routine method intravascular injections, does not comply with all conditions and can hardly be made by the general practitioner. Dr Icard prefers to use solution of formaldehyde. The technic consists in keeping the corpse in close contact with the solution internally and externally. The formaldehyde is injected in the body cavities and in the principal organs and the corpse is kept in a metallic coffin hermetically sealed the atmosphere of which is saturated with formaldehyde vapor. The formaldehyde is injected directly in large amounts through the abdomen, in the right hypochondrium and the stomach and around the liver, a syringe introduced into the nostrils sends another stream into the esophagus. Then the lungs are injected by way of the thorax and trachea and then the brain, by the ethmoid or the orbits. In all two or three liters must be used for an adult corpse. The coffin must be double lead or zinc for the interior wood for the outside. It must be filled with sawdust, impregnated with 4 or 5 liters of solution of formaldehyde. If necessary one can of course substitute for the lid of the coffin a carefully fitted glass which would permit the body to be viewed for an indefinite period.

Vaccination in France in 1934

As usual, a report was made to the Academie de medecine as to vaccination in the calendar year 1934. The results are fairly satisfactory, although in some instances the local authorities lacked means to enforce the law. Vaccination is compulsory at birth in the tenth year and at 21 but women escape, generally speaking this last obligation. In continental France including Corsica the total number of vaccinations and revaccinations was 1,394,446 in a population of 41,696,771 persons.

The law includes penal provisions against refractory persons, but the mayors, who are in charge of enforcement, too often forgot it and do not deal severely. In one department only (Seine inferieure), more than 1,370 policemen's reports were drawn up, and the great majority of law-breakers were dealt with leniently. Only thirty one were held culpable. The complications comprised only some general reactions after vaccination, some local reactions, including two adenitis, and two deaths.

BERLIN

(From Our Regular Correspondent)

Jan 13, 1936

The New Law Extends Professional Secrecy

Professional secrecy has been regarded at all times as one of the most important of a physician's obligations. It stands to reason that this fundamental proposition should find a place in the revised basic law of the medical profession. Heretofore it has been dealt with in the penal code, where it has been applied to solicitors, apothecaries and others as well as to physicians, and it has further been established by a number of criminal and professional decisions. In the recently promulgated German reichsaerzteordnung (reich physicians' ordinance) professional secrecy is removed from the general body of criminal law and formulated anew. According to the penal code, physicians and their assistants have been liable to a fine or to imprisonment for a period not to exceed three months on conviction of having divulged, without authorization, confidential secrets entrusted to them in virtue of their office, profession or trade. Now, according to the reichsaerzteordnung, a physician incurs the penalty of a fine or of imprisonment not to exceed one year or both, whenever he "reveals, without authorization, another person's secret entrusted or made known to him in the course of the practice of his profession." The definition has thus been extended. Heretofore the physician has been placed on a level with his assistants and others connected in some capacity with his professional activities. Medical students too were drawn into the question of medical professional secrets. Likewise a person was punished who, after the death of a physician, made known a secret that had been obtained through the laxity of the physician. Such secrets could be revealed only with the consent of the patient involved.

But the new aerzteordnung does not confine itself to the restatement of an old provision of the penal code, rather for the first time, it formulates rules to govern the exceptional cases in which a violation of professional secrecy would be permissible. "The physician is not subject to penalty, if he reveals such secret in the course of fulfilling a lawful or moral duty, or if such revelation of the secret serves a sound, legitimate public spirited purpose and when continued secrecy would do more harm than good." The principle is not fundamentally new that in cases in which professional secrecy serves to protect a criminal offense a physician is released from his obligation. While heretofore the law has been obscure on the matter of secret violation as a matter of actual legal practice the conflicting duties of the physician and his right to violate professional confidences in certain cases have been equitably taken into account. For example. A physician treated a woman who had a contagious disease. This woman showed affection for the children of a neighbor. The physician deemed it necessary to warn this neighbor. Brought to trial for violation of professional secrecy he was tactfully acquitted although contestable arguments were made in his behalf. This was more than thirty years ago. In another case, recently reported, a woman patient, while in a narcosis revealed to a physician an old crime committed by her husband. For this crime an innocent man was serving time. It was indisputable that in such circumstances the physician could not simply keep silence. Now this sort of

thing receives sanction in the basic law. But the innovation goes further still, the obligation of secrecy is no longer the self-evident starting point of the problem. It ceases to be so the moment the law provides that secrecy may be annulled by circumstances involving a "legitimate public spirited purpose," even where no moral duty is involved. For, as between the maintenance of secrecy and a consideration of public welfare the latter henceforth preponderates. Heretofore, because of a lack of legal precedents, little light has been shed on the latter subject. It may be possible, for example, for a physician to obtain, under seal of secrecy, knowledge of some unsolved crime. It is to be taken for granted that problems of this sort may, even under the new law, still be difficult of solution. Important as is the threatened equity, the inequity of a violation of secrecy may be equally serious, even more so. For in professional secrecy is rooted that confidence of the patient without which the physician cannot function.

The Condition of the Sick Insurance Societies

The latest figures on the condition of the sick insurance societies have just been made public. The average number of members of the state-regulated sick insurance societies (not including the so called ersatzklassen [indemnification societies] which are of no substantial importance) amounted in the period from October 1934 to September 1935 to 18,500,000, namely, 1,700,000 (10.2 per cent) more than in 1933. The greatest relative increase was noted in industrial and trade guild sick insurance societies (23.6 and 18.7 per cent, respectively). The membership in the municipal insurance societies had increased around 8 per cent, that of the mine workers' sick insurance societies around 4.9 per cent and that of the rural sick insurance societies around 3.8 per cent. The number of persons incapacitated by illness stood at 7,300,000 from October 1934 to September 1935, against 6,100,000 in 1933, that is to say about 20.7 per cent greater. For each 100 members there were, for the same periods compared, forty persons incapacitated by illness (1934 to 1935) against thirty-six (1933). This increase can probably be almost entirely attributed to the improvement in industry, the more the work is speeded up, the greater the demands on the body, this is particularly true when a certain number of newly employed workers are not accustomed to the exertion required.

Total expenditures of these insurance societies amounted from October 1934 to September 1935 to 1,245,400 reichsmarks, the intake for the same period grossed 1,181,400. The intake was up 14.6 per cent and the amount paid out 21.1 per cent as compared with the calendar year 1933. Instead of a surplus in excess of 2,700,000 reichsmarks a deficit of 64,000,000 is shown, which, however, stands against unencumbered assets of 800,000,000. The expenditure calculated per member increased from 61.12 to 67.15 reichsmarks, or about 9.9 per cent. In terms of the particular types of sick care provided by the insurance societies (for members and their families) the disbursement increased as follows: medical treatment around 2.2 per cent, hospital care around 2.3 per cent, dental service 10.9 per cent, medicines and other therapeutic supplies 20.1 per cent. Any critical examination of these increases must take into consideration, however, that from 1929 to 1933 by far the smallest change took place in the cost of hospital care and by far the greatest in the cost of dental care. The amount expended on dental care was in 1933 around 7.6 per cent and from October 1934 to September 1935 around 19.14 per cent above that of 1929. The rate of increased expenditure for medicaments and hospital care for the dependents of members is greater than that for the members themselves: 3.2 per cent against 4.2 per cent. Of the remaining services, care in childbirth showed the greatest increase (around 35.8 per cent) owing to the increase in the number of births, but the payment of death claims has also considerably increased (around 17.6 per cent).

Intoxication in Traffic Accident Statistics

Greater attention is constantly being given to the part played by intoxication as a cause of accidents. Accident statistics for Bavaria covering the years 1930 to 1934 inclusive are available. The only differentiation made in this enumeration is between pedestrians and drivers of vehicles. According to official police records, intoxication as a cause of accidents was established in the number of cases given in table 1.

TABLE 1—*Intoxication as a Cause of Accidents*

	Drivers	Pedestrians	Total
1930	646	170	816
1931	520	125	645
1932	495	106	601
1933	436	67	503
1934	780	113	893

Up to 1933 the number of intoxicated showed decided substantial decreases from one year to the next. Even in 1933, although an increase in cases of intoxication was feared on account of the greater volume of motor traffic, the decline continued further. Noteworthy therefore is the rise in 1934 in the number of drunken drivers (increase of 79 per cent) as well as in the number of pedestrians (increase of 68.7 per cent).

No less important is the ratio between the number of accidents due to drunkenness and the total number of accidents for

TABLE 2—*Relation of Accidents Due to Drunkenness to the Total Number*

	Driver Respon- sible All Causes	Per Cent Intoxi- cated	Pedestrians Respon- sible All Causes	Per Cent Intoxi- cated	Total Respon- sible for Accidents	Per Cent Intoxi- cated
1930	16,158	3.98	2,157	7.87	18,315	4.44
1931	14,037	3.73	1,770	6.93	15,807	4.1
1932	12,573	3.93	1,620	6.48	14,193	4.93
1933	11,676	3.72	707	8.48	12,383	4.6

which both drivers and pedestrians are responsible. As the number of drunken women involved is negligible, the figures in table 2, for the four years including 1933, represent only male offenders.

According to the figures, the number of guilty drivers and pedestrians decreased up through 1933, yet the relative proportion of intoxicated persons showed marked fluctuations and was higher for pedestrians than for drivers.

BELGIUM

(From Our Regular Correspondent)

Jan 20, 1936

The Brussels Medical Convention

Endocrinology was the subject discussed this year by the Brussels Medical Convention (Journées médicales de Bruxelles). The role of the glands of internal secretion in the pathogenesis of arterial hypertension was discussed by Mr. Maurice Roch, professor of the Geneva Faculty of Medicine. He stated that those glands the secretions of which are increased under the influence of an orthosympathetic excitation provoke hypertension while glands that obey the parasympathetic exert a hypotensive influence. The internal secretions of the pancreas, antagonists of epinephrine, have a hypotensive effect. Insulin, interesting in this connection from a theoretical point of view, is hardly to be employed in practice. Testicular insufficiency would not of itself seem to cause hypertension. The same appears true of ovarian insufficiency. Thyroid hyperfunctioning produces a certain degree of hypertension. As for the suprarenals their prominent role in producing crises of paroxysmal hypertension is well known. The hypophysis is interesting in several respects: (1) the posterior lobe that furnishes sub-

stances acting on the smooth fibers is energetically hypertensive, (2) the adenoma of basophil cells in the anterior lobe, described by Cushing, produces a specific type of hypertension (3) certain products secreted by the anterior lobe and which act on the thyroid, suprarenals and gonads may be the indirect cause of hypertensive crises. Little is known of the effects produced by the parathyroids, the liver and the kidneys, on the other hand, certain decomposition products of metabolism, such as choline and adenylic acid, are vasodilators and hypertensors. The production of these substances may perhaps explain the good reaction to muscular exercises observed in many persons with hypertension whose hearts are yet resistant.

Postencephalitic obesity was studied by Mr. Rene Cruchet, a professor at Bordeaux. One, two or even more years after the acute stages of epidemic encephalomyelitis, obesity frequently develops. This may be regarded as a sequela of the disease and, although stubborn, it usually moderates. Such forms of obesity may be reasonably related to certain states of emaciation following attacks of epidemic encephalitis. Both conditions are evidently due to hypophyseal disturbances.

Mr. N. Goormaghtigh, professor on the Ghent Faculty of Medicine, discussed the autonomic nervous system. In a histologic study he seeks to determine the importance of parasympathetic tissue. His paramount objective is to clarify an idea that is still a subject of controversy: the conveyance of humors to the synapses and nerve terminations of the sympathetic nervous system. It might be asked: Is not the liberation of sympathicotrophic substances registered on the ganglions, the seat of the synapses, conditioned by a stimulation of attached parasympathetic ganglions? It is interesting to note the integrity of the parasympathetic ganglions and the maintenance of their histochemical character after sympathectomy and double adrenalectomy. The author calls attention to the existence in mice of parasympathetic ganglions connected with the branches of the vagus that lead to the stomach and to the celiac plexus. These parasympathetic ganglions are characterized by a more compact grouping of cells and by the absence of chromaffin. The sympathetic nervous system possesses centripetal fibers as well. There are two known vasosensory reflexogenic zones, the sinus caroticus and the arch of the aorta. These zones have a vascular connection with the glomus caroticum and the glomus of Pletschka, the latter of which is situated between the pulmonary artery and the arch of the aorta. Other zones recording the variations of local circulation are found distributed throughout the vascular system, such as Ruffini's corpuscles of the skin (Masson), the glomus coccigeum of Luschka, the neuromuscular juxtaglomerular apparatus of the kidney and the coats of Weidenreich in the spleen.

Mr. L. Mayer, agrégé of the University of Brussels, who discussed clinical results from the use of ovarian grafts, based his remarks on eighty-eight bilateral ovariectomies with ovarian grafts. He states emphatically that the operation should be supplemented by autograft of healthy ovarian fragments. If the uterus also must be removed, it is preferable to limit the hysterectomy to the supra-isthmic portion and thus permit menstruation in at least some of the cases.

Mr. F. de Quervain, professor of clinical surgery at the Berne Medical Faculty, discussed surgery in malignant goiter, pointing out that the majority of malignant goiters develop in a benign goiter that has persisted. The author distinguishes between two types both marked by a slow growth and attenuated malignancy—the proliferating adenoma and the papillary. A third intermediary type, the hemangioendothelioma, is more malignant than the first two. Finally, there is epithelioma and sarcoma. Whenever a benign goiter increases in size especially from the fifth decade on without apparent reason that is to say, not following pregnancy or intracystic hemorrhage, malignancy should be suspected. The treatment comprises radical operation followed by irradiation with radium or

x-rays. The results are survival of one third of the patients after three and even five years. The results obtained in the treatment of cancer proper and sarcomas continue to be misleading.

Mr. A. P. Dustin, professor at the Brussels Faculty of Medicine, defends the idea of the thymus as essentially a focus of nucleoprotein accumulations. The cells containing such accumulations are of an extreme lability, and they are therefore easily liberated, probably along with certain humoral substances, by the thymus. While absence of the thymus is extremely rare, a reduction in the volume of the gland may result from infection, alimentary insufficiency, fever, suppuration or prolonged fasting. In simple hypertrophy the subjects show retarded growth, signs of mild rachitis, dyspnea, chronic bronchitis, lack of vasomotor equilibrium and frequently glottic spasm, sometimes with serious and even fatal accidents. In thymic lymphatic hypertrophy the child appears bloated, obese, rachitic, and subject to mucocutaneous disorders (dermatoses, blepharitis, rhinitis, enterocolitis and so on). Thymic enlargement takes place during the course of exophthalmic goiter. Although the pathogenesis of thymic hypertrophy is not well understood, it is known that the volume of the organ may be increased by a diet rich in nucleoproteins.

Rechlorination After Prostatectomy

Dr. Van Den Branden reported to the Belgian Urologic Society the remarkable results of his method of immediate rechlorination after prostatectomy by injection of a 20 per cent hypertonic solution of sodium chloride. The results may be summarized as follows: diuresis considerably increased, absence of postoperative shock, scarcely any postoperative azotemic pressure. The procedure will make anuria a rarity. This harmless prophylactic measure is therefore most emphatically indicated.

The Bunge Research Center

Thanks to the generosity of a wealthy citizen, Antwerp has possessed for the past year a center of medical and biologic research, the Bunge Institute (l'Institut Bunge). There is a diagnostic section and an experimental section where the most elaborate research can be pursued. It is under the direction of Mr. Van der Stricht, who first conceived its organization. Among his colleagues should be mentioned Prof. Ludo Van Bogaert in the field of pathologic anatomy and his brother-in-law in the field of physiology. The institute organizes lectures to which the physicians of Antwerp and vicinity are invited. In one of these lectures Mr. Negre of the Pasteur Institute some months ago outlined his researches on tuberculosis. December 15, Prof. Georges Mouriquand of Lyons described his work in a lecture on "Clinical Avitaminoses."

Marriages

JAMES BROWN SHELTON to Miss Elizabeth Caroline McReynolds both of Birmingham Ala. Dec. 14, 1935.

MARVIN I. McCLAIN, Scottsburg, Ind., to Miss Harriett Ford in Kankakee Ill., Dec. 21, 1935.

HARRISON JOHNSTON SHULL to Miss Margaret Cavert both of Nashville, Tenn., Dec. 28, 1935.

DEWITT HENDEE SMITH to Miss Mary Campbell Smith both of New York in December 1935.

THOMAS GREGORY DOLGHERTY to Miss Kathleen M. Brock both of New York February 22.

FURMAN YATES SORRELL to Miss Julia L. Little both of Wadsworth N. C. Dec. 3, 1935.

RUSSELL T. DRAPER, Cambridge, Mass., to Miss Edith E. Tucker of Dedham recently.

CLARENCE W. ROGERS, Rineville, Ky., to Mrs. Malinda Raine of Vine Grove, January 16.

FLOYD W. SHAFER, Gilbert, Pa., to Miss Lucy J. Erwin of Bethlehem February 19.

Deaths

William Bradbury McClure * Evanston, Ill., Johns Hopkins University School of Medicine, Baltimore, 1912, house officer, Harriet Lane Home for Invalid Children, Johns Hopkins Hospital 1912-1913, assistant resident and resident physician Children's Memorial Hospital, Chicago, 1913-1915, instructor in pediatrics, State University of Iowa College of Medicine Iowa City, 1915-1916, associate in pediatrics, Northwestern University Medical School, since 1930, attending pediatrician, Evanston Hospital, since 1918 and associate physician since 1930, attending physician to the Children's Memorial Hospital, Chicago, since 1920, fellow, at one time director, associate member, and member of the Otho S. A. Sprague Memorial Institute Laboratory for Research of the Children's Memorial Hospital served during the World War, member of the American Pediatric Society and the American Academy of Pediatrics contributed to pediatric textbooks and to the periodical literature, aged 51, died, February 13, of hypertensive cardiovascular disease and acute angina pectoris

George Gellhorn * St. Louis, Julius-Maximilians-Universität Medizinische Fakultät Würzburg, Bavaria, Germany, 1894, since 1932 professor of clinical obstetrics and gynecology Washington University School of Medicine, professor and director of the department of gynecology and obstetrics, St. Louis University School of Medicine, member and past president of the American Gynecological Society, fellow of the American College of Surgeons, member of the Deutsche Gesellschaft für Gynaekologie, aged 65, on the staffs of the Barnard Free Skin and Cancer Hospital, City Hospital Missouri Pacific Hospital, St. Louis Maternity Hospital Barnes Hospital, Jewish Hospital and St. Luke's Hospital, where he died, January 25, of heart disease

William Lawrence Clark * Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1903, past president of the American Academy of Physical Therapy, American Physical Therapy Association and the American Congress of Physical Therapy, member of the American College of Radiology and the American Radium Society, formerly lecturer on electrotherapeutics, Jefferson Medical College, at various times on the staffs of the Jefferson, St. Agnes' and St. Mary's hospitals, formerly owner of a hospital bearing his name, author of numerous articles in literature, and contributor of chapters to "Keen's Surgery," "Da Costa's Surgery" and "Mock's Practice of Physical Medicine", aged 59, died, January 12, of biliary infection

James Fairchild Baldwin * Columbus, Ohio, Jefferson Medical College of Philadelphia, 1874, professor of physiology and anatomy, Columbus Medical College, 1875-1882, professor of surgical gynecology and chancellor, Ohio Medical University, 1892-1899, and formerly professor of clinical surgery, Ohio State University College of Medicine, member and past president of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, past president of the Ohio State Medical Association, surgeon and chief of staff, Grant Hospital, author of "Operative Gynecology," 1898, aged 85, died, January 20, of carcinoma of the stomach

William Johnson Taylor * Philadelphia University of Pennsylvania Department of Medicine, Philadelphia, 1882, member of the American Surgical Association, past president of the College of Physicians of Philadelphia and the Philadelphia Academy of Surgery, served during the World War at one time professor of orthopedic surgery, Philadelphia Polyclinic, for many years attending surgeon to the Philadelphia Orthopedic Hospital and Infirmary for Nervous Diseases on the staffs of St. Mary's, St. Agnes', Philadelphia General and the Woman's hospitals, aged 74, died, January 22, of bronchopneumonia

Isaac Scott Stone, Washington D. C., University of Maryland School of Medicine, Baltimore, 1872, member of the Medical Society of the District of Columbia, a founder, vice president in 1905 and president in 1918 of the Southern Surgical Association for many years professor of gynecology and abdominal surgery, Georgetown University School of Medicine, fellow of the American College of Surgeons, on the staff of the Columbia Hospital for Women, aged 84, died Dec. 22, 1935 of cerebral thrombosis

Jeffrey Charles Michael * Houston, Texas, Tulane University of Louisiana Medical Department, New Orleans, 1909, chairman of the Section on Dermatology and Syphilology, American Medical Association, 1934-1935, member of the American Dermatological Association, formerly secretary of the Harris County Medical Society, served during the World War,

on the staffs of the Jefferson Davis and Hermann hospitals, aged 47, died, January 21, as the result of a fall from a tenth story window

Justus Ohage, St. Paul, University of Missouri School of Medicine, Columbia, 1880, member and past president of the Minnesota State Medical Association, past president of the Ramsey County Medical Society, at one time professor of clinical surgery, University of Minnesota Medical School, Minneapolis, Civil War veteran, health officer of St. Paul, 1899-1918, aged 86, died, Dec. 26, 1935

Louis Fleming Fallon * Augusta, Maine, University of Pennsylvania School of Medicine, Philadelphia, 1916, fellow of the American College of Surgeons, on the staffs of the Veterans Administration Facility, Gardiner (Me.) General Hospital, Sisters Hospital, Waterville and the Augusta General Hospital, aged 44, died, January 8, of cerebral hemorrhage

Thomas M. Blake, Double Springs, Ala., University of Nashville (Tenn.) Medical Department, 1907, member of the Medical Association of the State of Alabama, past president of the Winston County Medical Society, formerly superintendent of education of Winston County, aged 63, died, Dec. 29, 1935 in a hospital at Jasper

Edgar Klopp Conrad * Hackensack, N. J., Bellevue Hospital Medical College, New York, 1893, past president of the Bergen County Medical Society, on the staff of the Hackensack Hospital, aged 65, died, January 27, of carcinoma of the head of the pancreas with metastasis to the liver

Jane Ketchum Wildrick Banes, Damascus, Pa., Woman's Medical College of Pennsylvania, Philadelphia, 1909, member of the Medical Society of the State of Pennsylvania on the staff of the Carbondale (Pa.) General Hospital, aged 59, died January 5, of cardiovascular renal disease

Erestus Talbot Hanley, Seattle, Rush Medical College, Chicago, 1905, member of the Washington State Medical Association, past president of the Western Branch of the American Public Health Association, aged 59, on the staff of the Providence Hospital, where he died, January 23

Robert William Benner * Tiffin, Ohio, University of Michigan Medical School, Ann Arbor, 1925, vice president and formerly secretary of the Seneca County Medical Society, on the staff of the Mercy Hospital, aged 37, died, January 4, of pneumonia following scarlet fever

Earl Albert Linger * Oconto, Wis., Rush Medical College, Chicago, 1914, served during the World War, health officer of Oconto, on the staff of the Oconto City and County Hospital, aged 48, died, Dec. 22, 1935, in St. Vincent's Hospital, Green Bay, of pneumonia

Marion Cicero McClain, Tate, Ga., University of Georgia Medical Department, Augusta, 1887, member of the Medical Association of Georgia, aged 76, died, Dec. 25, 1935, of anuria in chronic nephritis and edema of the lungs

Delzie Roy Lee * Indianapolis, University of Louisville (Ky.) Medical Department, 1916, served during the World War, on the staffs of St. Vincent's and Methodist hospitals, aged 45, died suddenly, January 3, of coronary occlusion

Louis Lorenzo Kelley, Okemos, Mich., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1875, formerly state senator, aged 86, died, Dec. 21, 1935, of hypostatic pneumonia

Willard Rea Allison, Lafferty, Ohio, Western Pennsylvania Medical College, Pittsburgh, 1901, member of the Ohio State Medical Association, aged 62, died, January 9, of cerebral hemorrhage

Max Charles Hawley * Agnew, Calif., Central College of Physicians and Surgeons, Indianapolis, 1904, on the staff of the Agnews State Hospital, aged 56, died, Dec. 28, 1935, of coronary thrombosis

James Elias Dodson, South Pasadena, Calif., University of Nashville Medical Department, 1885, aged 78, died, Dec. 16, 1935 in the Pasadena Hospital, of a hip fracture and pneumonia

Szymon Szudrawski, Manistee, Mich., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899, aged 69, died Dec. 23, 1935, of carcinoma of the stomach

Jerre C. McMahan, Los Angeles, Vanderbilt University School of Medicine, Nashville, Tenn., 1881, aged 85, died, Dec. 29, 1935, of cerebral hemorrhage and bronchopneumonia

John Matson Stowell, San Francisco, College of Physicians and Surgeons of San Francisco, 1901, aged 73, died, Dec. 18, 1935 of hypertension, myocarditis, uremia and nephritis

Oliver Perry Pisor, Monmouth, Calif., Jefferson Medical College of Philadelphia, 1881, aged 82, died, Dec. 20, 1935, of coronary occlusion and arteriosclerosis

Correspondence

VITAMIN D AND PARATHYROID HYPERPLASIA

To the Editor —In a recent article (THE JOURNAL, February 8, p 427) Wilder and Howell discussed the relationship of vitamin D to parathyroid hyperplasia and concluded that the latter was compensatory. Quick and Hunsberger (THE JOURNAL, March 7, 1931, p 745), who in their study of hyperparathyroidism likewise considered the relation of vitamin D to parathyroid hyperplasia, reached similar conclusions and presented as a possible explanation the hypothesis that the maintenance of the calcium level in the blood is under the dual control of vitamin D and the parathyroids, the former aiding in the absorption of calcium from the intestinal tract, the latter in mobilizing the element from osseous tissue, and that when a depletion in the supply of vitamin D occurs the entire burden of maintaining the normal concentration of serum calcium is thrown on the parathyroids. Under those conditions the organism responds by means of a physiologic hyperplasia of these glands. Quick and Hunsberger furthermore emphasized the value of administering large doses of vitamin D preoperatively to guard against postoperative tetany, a serious and frequent complication following the removal of a parathyroid adenoma. It appears that this suggestion has received relatively little attention. Nevertheless, the fact that it is based on sound experimental evidence, is exceedingly simple and entirely without harmful effect warrants that attention be again directed to it.

ARMAND J QUICK, M D, Milwaukee

SPLANCHNIC NERVE SECTION IN JUVENILE DIABETES

To the Editor —In THE JOURNAL, January 25, page 279, Dr J M Rogoff reported the production of Addison's disease following adrenal denervation in a patient with diabetes. He pointed out the real danger of interfering with the blood supply of the cortex and also emphasized the fact that the sectioned nerves regenerate in a few weeks. This report, together with the editorial comment on it, no doubt will deeply impress the medical profession with the hazards of adrenal denervation.

The surgical procedure of adrenal denervation is frequently confused with splanchnic nerve section, an operation that is performed without any hazard to the blood supply of the cortex.

In several publications (*Arch Surg* 26 750 [May] 1933, 30 151 [Jan] 1935, *Ann Int Med* 7 422 [Oct] 1933, 7 1201 [April] 1934, *Ann Surg* 102 22 [July] 1935) my co-workers and I on the basis of experimental evidence and clinical observations stated that (1) splanchnic nerve section produces an identical change in carbohydrate metabolism with adrenal denervation, (2) the additional denervation of pancreas and liver may be an added advantage, (3) interference with the blood supply of the adrenal does not take place after splanchnic nerve section nor has a single clinical case or considerable experimental material shown any cortical insufficiency, (4) regeneration of the nerve fibers can be effectively prevented in the supradiaphragmatic approach by anastomosing the proximal end of the splanchnic nerve to an intercostal nerve.

Both objections to adrenal denervation then, namely, interference with adrenal blood supply and early regeneration, can be met by splanchnic nerve section. Should one feel that this is not a complete denervation of the adrenal, the upper two lumbar sympathetic ganglia can be sectioned.

The third and most important criticism of this article is leveled against tampering with the adrenals in case of many unrelated conditions. Again one can most heartily agree with this view. In the case of severe, juvenile, insulin resistant

diabetes, however, my co-workers and I have accumulated sufficient data to justify splanchnic nerve section in carefully selected cases. This operation is done with the view of collecting data over a long period of time on patients whose disease hazard is not as small as some might believe. The low mortality statistics of Joslin, Wilder and Allen, and Priscilla White cannot be reproduced in the country at large. The actuarial statistics of the Metropolitan Life Insurance Company portray a sad picture of diabetes mortality. In an average of four individual statistics of diabetic mortality in different states of the United States and Canada, roughly one third of all patients who died of diabetes had never used any insulin and less than half of them ever tested their urine (*J Kansas M Soc* 36 177 [May] 1935). Thus in addition to other considerations a definite social and economic indication must be recognized in the selection of diabetic children for operation.

The object of this operation on juvenile diabetic patients is to slow down or inhibit excessive glycogenolysis. Not the adrenal gland but the liver is the center of the attack. Splanchnic nerve section produces increased glycogen storage and fixation and this is all we wish to accomplish with the operation.

We are continuing our experiments on the surgical treatment of juvenile diabetes. So far the postulate of the editorial that the therapeutic hazard should not exceed the disease hazard has not been overstepped.

GEZA DE TARATS, M D, Chicago

THE PRACTICAL FACTOR IN DRUG NIHILISM

To the Editor —Dr Norman A David in his article "The Recent Graduate and Drug Nihilism" (THE JOURNAL, February 1, p 405), accuses the recent graduates of drug nihilism. The real cause, which he failed to mention, is the modern drug store with its glorified counter prescribers, especially in a small town where a druggist treats everything from cancer to venereal diseases. The doctors in these small communities are forced to dispense their own drugs, hence they deal with houses whose medicines are reliable and their composition known. Let us reform these unlicensed practitioners! Let us have more rigid laws! Why should we fatten the pocket books of the druggists with our prescriptions? If the evil is destroyed then our young doctors, especially in the towns, will go back to the art of pharmacology and posology.

F F SCHWARTZ, M D, Fairport Harbor, Ohio

HEART BLOCK AND PREGNANCY

To the Editor —In THE JOURNAL, February 15, page 532, in an article on heart block and pregnancy, by Mitchell Bernstein, the following statement is made: "It is interesting to note that a study of the literature up to Jan 1, 1936, yielded only six recorded cases of complete heart block in which successful gestation had occurred." The six cases listed by the author were reported by Jeanmin and Clerc, Clerc and Levy, Laubry, Titus and Stevens, Dressler and Herrmann and King.

For the sake of completeness may I add that three years ago I reported a case of complete heart block that was found in a pregnant woman (*Am J Obst & Gynec* 25 125 [Jan] 1933). As was done in Bernstein's case, I performed a cesarean section under local anesthesia and delivered a living child. The mother's recovery was uneventful. In my article I mentioned eleven previously reported cases of complete heart block associated with pregnancy. The first case of this kind was reported by Freund (*Ztschr f Geburtsh u Gynak* 30 175, 1918). This patient an octipara, died after having had a miscarriage. She also had had signs and symptoms of heart block during her seventh pregnancy. The second case was

reported by Walz (*Zentralbl f Gynak* 46 1941, 1922) In this case pregnancy was uneventful and labor was easy and spontaneous One of the two patients with complete heart block observed by McIlroy and Rendel (*J Obst & Gynaec Brit Emp* 38 7, 1931) went through two gestations, the second of which terminated in the delivery of twins In the series of eleven cases of complete heart block complicating pregnancy that were reported in my article, there were two deaths (Freund and Herskovics)

J P GREENHILL, M.D Chicago

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed Every letter must contain the writer's name and address but these will be omitted on request

FELTON'S SERUM AND DIATHERMY IN PNEUMONIA

To the Editor—1 Why isn't Felton's serum more generally used by the profession in the treatment of pneumonia? 2 Please give reference to the latest contribution on this subject 3 Is it conceded that diathermy produces sequela such as empyema if used in the treatment of pneumonia? 4 Do you approve, when indicated of the use of diathermy in pneumonia? Please do not sign name

M.D. New Jersey

ANSWER—1 Physicians who have the largest experience in the management of the pneumonias regularly use refined and concentrated serums in the treatment of those pneumonias for which serums are available This statement is based on published reports from Bellevue Hospital (Cecil, R L, and Plummer, Norman Pneumococcus Type I Pneumonia, *THE JOURNAL*, Nov 22, 1930, p 1547) and Harlem Hospital (Bullowa, J G M Studies in the Serum Treatment of Pneumonia, *New York State J Med* 33 13 [Jan 1] 1933) of New York and from Massachusetts (Sutliff, W D and Finland, Maxwell Type I Pneumococcus Infections, with Special Reference to Specific Serum Treatment, *New England J Med* 210 237 [Feb 1] 1934, Heffron, Roderick, and Anderson, G W Two Years' Study of Lobar Pneumonia in Massachusetts *THE JOURNAL*, Oct 21, 1933, p 1286) and Great Britain (Report of the Therapeutic Trials Committee of the Medical Research Council The Serum Treatment of Lobar Pneumonia, *Lancet* 1 290 [Feb 10] 1934) Physicians with less experience and opportunity for observation of the pneumonias are more frequently using serum in the treatment of pneumonia whenever they have been educated to do so by such intensive campaigns as have been undertaken in Massachusetts and New York

Physicians may refrain from the use of Felton's serum because of ignorance of its benefits, fear of untoward serum reactions, or mistaken motives of economy Modern methods for differentiating and studying the pneumonias have changed the point of view concerning their treatment Stress is now placed on specific treatment and prevention and cure of bacteremia which is present in most fatal cases Serum treatment requires knowledge and skill comparable to those necessary for surgical procedures The prompt dramatic termination of the disease is a gratifying reward for effort Physicians with little experience are prone to expect that their particular patient will not have a blood invasion and will recover without serum by crisis on the eighth day The ordinary death rate in adults from type I pneumonias ranges from 20 to 40 per cent The death rate from pneumonia in children between the second and twelfth year is much smaller than in infants and adults In a large hospital 120 consecutive adult type I pneumonias were treated with serum, with ten deaths, 8.3 per cent No patients succumbed who had been treated before the sixth day

Immediate serum reactions are infrequent and with some lots they do not occur Serum sickness of varying severity occurred in 13 per cent of 500 cases of type I pneumonia Ophthalmic and skin tests for sensitivity should be made before giving serum

To a certain extent the amount of serum required depends on the earliness of administration The cost for serum is frequently no more than the expense for operating room and dressings for patients suffering from appendicitis Against the cost of the serum should be offset the reduced cost of nursing and of oxygen therapy the shorter convalescence the more rapid return to work and the less frequent occurrence of complications The value of the lives saved may be estimated from the tables in Dublin's 'The Money Value of a Man' (Ronald

Press Company, 1930) Massachusetts, Connecticut, Maine and New York supply serum for type I, as do the cities of New York and Detroit All except New York State supply serum also for type II cases Detroit supplies serum for type VII and New York supplies serum for type VII and a number of other types Bullowa and Mayer (Hazards of the Induction of Pneumothorax, *THE JOURNAL*, July 20, 1935, p 191) encountered no cases of empyema in fifty-three type I cases treated with serum within the first two days

2 An excellent paper presenting the advantages of the treatment of pneumonia with serum was contributed by William P Belk (The Specific Treatment of Lobar Pneumonia, *THE JOURNAL*, Sept 14, 1935, p 868)

3 It is improbable that empyema can be attributed to the use of diathermy Empyema in pneumonia is the result of a very severe pleuritic invasion and frequently is associated with bacteremia

4 John S Coulter, in a recent review on medical diathermy (*THE JOURNAL*, January 18, p 209), says "In the management of pneumonia, medical diathermy does seem to be of definite benefit in reducing the severity of the thoracic pain It is not an accepted specific treatment in lobar pneumonia"

While oxygen is being administered diathermy should not be employed, because ignition of the bedclothes may occur from small sparks in the presence of oxygen-enriched air In the management of pneumonia it is important to relieve anoxemia

SYPHILIS IN PREGNANCY

To the Editor—A woman aged 27 developed a sore on her lower lip in July 1929 while engaged to a supposedly healthy young man This sore was treated unsuccessfully for some weeks until finally a Wassermann test was taken and it came back strongly positive In August 1929 she was given a series of twenty intravenous injections of arsphenamine two injections a week The dosage is not known In February 1930 she received a course of forty intravenous injections one week apart In June 1931 and in January 1932 she was given another series of twenty injections of arsphenamine again one week apart This makes a total of 100 injections (intravenous) from August 1929 to May 1932 all being arsphenamine according to the patient's story Several different doctors gave these treatments in various cities the patient only recently coming under my care She is sure that she has had no medication by mouth and no intramuscular injections and says that she had one course of mercury inunction sometime during this period A Wassermann test in June 1932 was negative and one taken in February 1935 and sent to two laboratories came back negative from both The question that now arises is this She is now two months pregnant and wants to know what the chances are of having a healthy child She suffered so much both from intravenous injections and from the reactions after each injection which made her feel miserable for twenty four hours or more after each one that she flatly refuses any more intravenous therapy and insists that she would rather run the risks of an abortion than have any more injections She might be persuaded to have some bismuth intramuscularly if this would assure her a healthy child For herself alone she would rather take the chances of future trouble than have any more injections of any kind The points I should appreciate your opinion on are these: 1 The chances of her having a healthy child on no more treatment 2 If these are absolutely essential how much and what preparation would you recommend other than intravenous as this she refuses even to consider 3 What are the chances of her developing some form of tertiary lesions if she takes no more treatment? (She also refuses lumbar puncture because of an unfortunate experience) 4 Is it necessary for her to have some heavy metals now and if so what and how much? 5 Would prolonged medication by mouth of a mixture of iodides and mercury be of any real value? Except for being rather nervous and very worried as to what course to pursue the patient seems to be in excellent physical condition her heart blood pressure and so on all being apparently normal I will appreciate any information you may be able to give me Should you care to print this in any form will you kindly omit my name

M.D. Pennsylvania

ANSWER—The answer to this inquiry is based on the results reported in Cooperative Clinical Studies in the Treatment of Syphilis Syphilis in Pregnancy (Reprint 46, *Venereal Disease Information* U S Public Health Service)

A syphilitic mother should be given early and adequate treatment throughout every pregnancy whether her Wassermann reaction is positive or negative This statement may be augmented by saying that treatment received previous to conception is not an assurance that a nonsyphilitic child will ensue Likewise all pregnant syphilitic women should receive treatment throughout the pregnancy, the earlier in the pregnancy that the treatment is started, the higher is the incidence of nonsyphilitic children When treatment was started before the fifth month of pregnancy and consisted of not less than ten injections of an arsphenamine and ten injections of a heavy metal 91 per cent of the children born were nonsyphilitic

1 Sixty-two per cent of the syphilitic pregnant mothers with negative Wassermann reactions who were treated previously but not during this pregnancy gave birth to normal children

Accordingly, if the patient in the case cited is not treated, there is a 38 per cent chance that she will have a syphilitic child

2 Arsphenamine and a heavy metal, preferably a preparation of bismuth, should be given in alternation, with a minimum of ten injections, and preferably more, of each. One of the preparations of arsphenamine for intramuscular use, such as bismuth arsphenamine sulfonate or sulfarsphenamine, might be tried.

3 About 4 per cent of the cases adequately treated during pregnancy showed clinical progression subsequently.

4 The average pregnant syphilitic woman tolerates the arsenicals more satisfactorily than she does the heavy metals. Kidney complications were quite common from the heavy metals. Intramuscular injections of a bismuth compound in small doses every five days might be well tolerated. If a heavy metal is used, weekly urine examinations should be made.

5 Medication by mouth has no place in the treatment of a pregnant syphilitic woman.

HEAT AND POSTURE IN ARTERIAL HYPERTENSION

To the Editor—Where can I obtain information referred to by Dr Irving Cutter in his syndicated article on reduction of blood pressure by heat applied to the extremities? The same author refers to variations in pressure according to posture.

F BRITTON LANGDON, MD Des Moines Iowa

ANSWER—The origin of the quotation in the article by Dr Irving Cutter was a report by R F Fox appearing in the *Lancet* (1 984 [April 27] 1935). It has been repeatedly reported that external heat, in the form of hot baths or otherwise, causes a reduction of the arterial tension through the induction of active cutaneous hyperemia. This is the converse of the reaction of the arterial tension to cold. Exposure of one extremity to cold (ice water) has been employed (Hines, E A, Jr, and Brown, G E *Ann Int Med* 7 209 [Aug] 1932, and others) to determine the vasomotor lability. It is asserted that after a single hot bath the systolic tension falls as much as 15 mm and remains reduced for from two to six hours. Reduction of the diastolic tension is less notable and less persistent. In the management of hypertensive arterial disease such hydrotherapy is an adjunct to rest and to the leisurely existence at spas. The increased fluid intake encouraged at such watering places also is of value.

Variations in arterial tension due to changes in posture are of minor importance except in certain instances of postural hypotension. In these patients there is a failure of the normal control of the arterial tension when they quickly change from the horizontal to the vertical position. Normally such change in posture is associated with a compensatory rise in the arterial tension to overcome the hydrostatic pressure of the column of blood to the head. Symptoms of cerebral anemia appear when the patient is vertical. Syncope, presyncope, vertigo or tinnitus frequently occurs soon after the erect position is assumed (Ganshorn, J A, and Horton, B T *Proc Staff Meet Mayo Clin* 9 541 [Sept 12] 1934).

FREQUENCY OF URINATION WITH ENLARGED PROSTATE

To the Editor—I am 61 years old, weigh 222 pounds (101 kg) and am 5 feet 11 inches (180 cm) in height. I had a tonsillectomy ten or twelve years ago for arthritis with complete relief. The arthritis returned two years ago and was again relieved by the extraction of an abscessed tooth. Except for a good many attacks of influenza and a gastroduodenal inflammation nearly thirty years ago my health has been in the main good. But for the past twelve or fifteen years I have been annoyed by polyuria both nocturnal and diurnal. Urinalysis has never shown anything abnormal. It interferes so much with sleep at night that it has become a nuisance. There is some prostatic enlargement but the last test showed no residual urine. The polyuria is worse in winter than in summer as I perspire very freely in hot weather. I have always drunk a good deal of milk but not much water except in hot weather. I have tried solution of posterior pituitary and ergotamine with no results. Can you suggest something to better this annoying condition? Please do not publish name.

MD Virginia

ANSWER—Frequency of urination at night in a patient aged 61 in whom there is some prostatic enlargement, can best be explained on the basis of the prostatic enlargement in spite of the fact that the patient does not show residual urine. In a certain number of patients who suffer from prostatic obstruction the symptoms are marked and residual urine is often absent. In other words, it is not necessary in every patient with prostatic obstruction to have residual urine.

Polyuria as a general proposition is worse in winter than in summer. On the other hand polyuria at this time of life may be due to conditions other than prostatic enlargement, for instance, it may be due to stone in the bladder, stone or tones in the prostate, diabetes or nephritis. Therefore, the

patient should have a complete physical examination and if this is negative he should be examined with the cystoscope and the resectoscope and if this shows, as it probably will, intravesical or intra-urethral enlargement, the patient should consider having the obstruction removed by transurethral electroresection.

Drugs, such as solution of posterior pituitary and ergotamine, will not help much if the trouble is due to the conditions mentioned.

HEREDITARY SYPHILIS

To the Editor—In a family in which three or four children have hereditary syphilis the condition was discovered several years ago and Wassermann tests were all positive. Likewise the blood Wassermann reaction of the mother was positive. The history of infection before her marriage was then elicited. The condition was suspected in the children because of keratitis. They have all had two or more courses of anti-syphilitic treatment but of course still have positive Wassermann reactions. There are no demonstrable lesions of any kind. These children have been permitted to attend public school but recently a local doctor has registered strenuous objections to the children remaining in school because of the danger of infecting others. He has gone so far as to threaten to withdraw his own children from school if these children are permitted to attend. The question was brought to me as city school physician whether these children could infect others and whether or not they should continue in school. My opinion is that they are not a menace and cannot transmit the disease. Because of the situation that has arisen, however, they have been withdrawn from school pending investigation to determine whether or not they might be infective. It seems a pity that these children should be further handicapped by being denied the advantages of some education. Before I make a definite recommendation I want to be reasonably sure that I am doing the right thing. If you are in possession of any information that will be a guide in this case or if you can procure such information or direct me to reliable sources for this information I will greatly appreciate it.

MD Utah

ANSWER—The decision that these children are not infectious is justifiable. The fact that they are of school age indicates that they are old enough to have the tardive type of congenital syphilis, which is noninfectious in practically all cases. After even a moderate amount of treatment the possibility of a tardive syphilitic person being able to transmit the disease is eliminated for all practical purposes. It is the practice in most pediatric hospitals to place most children with this type of syphilis in general wards and to permit them to intermingle with other patients there. It would seem unfair to take away from these children the opportunity for an education when there is not justification from past experience that they would in any way endanger the other children with whom they came in contact at school.

ADAMS STOKES DISEASE

To the Editor—A woman aged 57 has experienced several syncope attacks during the past year. The blood pressure is 240 systolic 90 diastolic. The pulse rate is 36. There is moderate arteriosclerosis. The urine shows a trace of albumin and an occasional pus cell. The remainder of the physical examination reveals nothing significant. I have made a diagnosis of Adams-Stokes disease. What procedure should I follow in treating her? Would you advise the use of barium chloride or atropine in the face of the systolic reading? MD North Carolina

ANSWER—The diagnosis probably is quite correct. This could be conclusively proved by observation during the attack of syncope. In typical Adams-Stokes disease the syncope period is associated with a total absence of systolic sounds (soft muffled auricular beats may occasionally be heard). Electrocardiographic evidence of ventricular standstill is corroborative proof. Syncopal attacks of vagus origin, which may simulate Adams-Stokes disease, are usually brief and occur more frequently in younger persons. The symptoms can be induced by pressure on the carotid sheath.

Of great interest is the enormous pulse pressure. This in itself is indicative of chronic heart block, for the systolic pressure is quickly but persistently increased in hypertensive arterial disease on the occurrence of heart block. The exact mechanism of this phenomenon is uncertain.

The use of atropine (0.001 Gm) or tincture of belladonna (1 cc) is not contraindicated by the systolic hypertension. It is essential to depress, so far as possible, the vagal effects, which may enhance the bradycardia. Atropine may be wisely administered to the point of tolerance. Barium chloride is used for the purpose of stimulating the ventricular pacemaker, and its use is justified. Ephedrine hydrochloride and/or epinephrine have also been so employed, but their notable vasoconstrictor activity strongly contraindicates their use.

More logically employed are vasodilators, which may aid in improving the coronary circulation. The presence of arteriosclerosis is not a coincidence, for the interference with the conduction of the cardiac impulses is unquestionably due to

myocardosis secondary to impairment of the coronary circulation and hypertensive arterial disease. Reduction of the cardiac burden by reducing the peripheral resistance to the circulation through systemic reduction of the arterial tension should serve to aid the handicapped myocardium. Such vasodilators include aminophylline, soluble nitrite, the alkyl nitrates and bismuth subnitrate. If aminophylline is well tolerated (gastric irritation is best avoided by solution of the tablet before administration) it may prove of considerable value. The soluble nitrites or the alkyl nitrates are best employed in very small doses at frequent intervals, for their effects are only transient and tolerance may be acquired. Bismuth subnitrate may be administered in doses of 0.6 Gm three times a day for many weeks as a prophylactic arterial sedative, which often diminishes the frequency and severity of anginal attacks. Adams-Stokes disease is in many essentials a form of angina pectoris.

The ultimate prognosis is precarious. Death may occur in acute syncope from ventricular standstill or with intense cardiac pain from further interference with the coronary circulation. Death by congestive cardiac failure is exceptional in Adams-Stokes disease. Activity should be minimal and attention to nutrition, anemia and general physical health not neglected.

DIPHTHERIA ANTITOXIN BEFORE POSITIVE CULTURE

To the Editor—I was called to see a patient aged 14 suffering from sore throat difficult breathing respiration 32 to 45 per minute temperature 103 F general prostration and pulse rate 140-160 weak and thready. Physical examination revealed an extensive dirty white pseudo membrane over the tonsils uvula and nasopharynx. The lungs were negative for pneumonia. The abdomen was normal. The patient presented clinical symptoms and signs of diphtheria however as there was no other case of diphtheria in the community I gave digitalis one half grain (0.03 Gm) of codeine sulfate 5 grains (0.3 Gm) of sal ethyl carbonate and a hexylresorcinol gargle. Within a few hours I was again called and found the patient worse. This time I gave 40,000 units of diphtheria antitoxin. The patient began to improve the membrane disappeared and the patient recovered with no ill effects. My pay is being refused because I did not get a report from the state laboratory before giving the antitoxin. I am 250 miles from the state laboratory and my practice is in the woods. I maintain that to have waited would have placed the patient's life in jeopardy and if the patient had not died would have had impaired heart nephritis and so on. Was it proper for me to give diphtheria antitoxin immediately or should I have waited from thirty six to forty eight hours for a laboratory report? I was formerly resident physician at Sydenham Hospital for Contagious and Infectious Diseases and while there saw many deaths due to delay in giving diphtheria antitoxin before patients came to the hospital. Please omit name.

M D Wisconsin

ANSWER—The physician should be commended for prompt administration of diphtheria antitoxin. Ordinarily the laboratory should be relied on only to confirm the clinical diagnosis. It is unfortunate that such valuable service was not appreciated.

HYPERTHERMIA IN PARALYSIS AGITANS

To the Editor—I have been appealed to by a former patient as to the advisability of taking the hyperthermia treatment for Parkinson's disease. Having observed the results in a few cases of infectious origin I refrained from speaking my mind until I could consult an unbiased authority hence this letter to you. This is an advanced case of Parkinson's disease and I felt that a prolonged maintenance of a high body temperature could only do harm. The operator asks \$100 for eight treatments of five hours duration each. Whether this is the chief therapeutic indication I am unable to say. Please reply as promptly as possible.

M D Illinois

ANSWER—No logical reason for the use of fever therapy in Parkinson's syndrome has yet been presented in the medical literature. No carefully controlled clinical study in a large group of cases has yet been set forth.

In the letter of inquiry it is not stated whether the advanced Parkinson's syndrome is senile or postencephalitic.

W H Schmidt, an exponent of fever therapy in the treatment of Parkinson's syndrome has merely recommended it in the postencephalitic type (Fever Therapy and Other Recent Developments in Physical Therapy, *New England J Med* 209:419 [Aug 31] 1933). There is apparently no particular reason to use it in the senile type, in fact it may be quite dangerous to use fever therapy for an aged individual. The Council on Physical Therapy has pointed out that in the administration of hyperpyrexia produced by physical agents, "advanced age (with a few exceptions 60 years may be taken as an arbitrary limit)" should be regarded as an "absolute" contraindication (Hyperpyrexia Produced by Physical Agents *THE JOURNAL*, Oct 27, 1934 p 1308).

In the postencephalitic group, Schmidt's statement that "we have also treated a number of cases of postencephalitis showing

the parkinsonian syndrome with marked improvement in quite a few" is so vague that it can carry little weight. In at least one clinic careful studies in four cases have revealed no significant beneficial effects when fever treatments were given.

Until a satisfactory series of controlled clinical studies in at least 100 cases is presented in the literature, either to confirm or to refute the statement of Schmidt, no final conclusion can be drawn.

In the meantime it would probably be best to heed the statement of David Riesman that "fever therapy in the form of diathermy or malarial or bacterial injections seems to produce no permanent benefit. It may even do harm" (*Encephalitis Lethargica*, *Ann Surg* 101:303 [Jan] 1935).

INSTRUMENTS FOR MASSAGE OF PROSTATE

To the Editor—In the issue of Dec 21 1935 in the answer to the query on emptying seminal vesicles an instrument was mentioned to be attached to the index finger for massage of the prostate and vesicles. Will you please let me know the name of the concern making the instrument? My index finger is rather short and I have difficulty reaching the upper borders of the vesicles.

B W W M D New York

ANSWER—There are two such instruments. 1 Eastman Masseur, made by the Eastman Company, Indianapolis. This is a long hollow tube with a curved knob at the tip. The finger fits snugly into the lower end. There are two slits along the sides at the base to allow for different size fingers. 2 The Leusman, which consists of a long curved hollow metal tube that fits the finger. There is a handle attached to the open end which fits into the palm of the hand and allows for a grip on the instrument. This instrument is not available.

DEFICIENCY OF BEARD

To the Editor—What will stimulate the growth of a beard in a man aged 23 otherwise normal? Please omit name.

M D Wisconsin

ANSWER—The absence of hair growth in the beard in a man of 23 usually has some endocrine basis. These cases often show other evidences of endocrine deficiencies, such as sparsity of hair in the axilla and pubic area, underdeveloped genitalia and voice changes.

There should be a basal metabolic determination for thyroid deficiency. If there is any present, thyroid may be given, or it may be given empirically. While anterior pituitary substance by mouth or injection may be used, its value in the promotion of hair growth is questionable.

Council on Medical Education and Hospitals

ADDITIONAL HOSPITALS APPROVED

The Council on Medical Education and Hospitals of the American Medical Association has given its approval to the following hospitals since the publication of the last previous list in *THE JOURNAL*, Dec 28, 1935.

Hospitals Approved for Intern Training

Homoeopathic Hospital Wilmington Del
Henrotin Hospital Chicago
Rex Hospital Raleigh N C
Fitzgerald Mercy Hospital Darby Pa
Homeopathic Medical and Surgical Hospital Reading Pa
St Mary's Hospital Superior Wis

Hospitals Approved for Residencies in Specialties

Grady Hospital (White Unit) Atlanta Ga Medicine obstetrics gynecology ophthalmology otolaryngology and surgery
Wesley Memorial Hospital Chicago Medicine and surgery
Free Hospital for Women Brookline Mass Gynecology
State Hospital No 4 Farmington Mo Psychiatry
City Memorial Hospital Winston Salem N C Medicine and surgery
Toledo State Hospital Toledo Ohio Psychiatry
St Elizabeth's Hospital Youngstown Ohio Medicine and surgery
Children's Hospital Chattanooga Tenn Pediatrics
Chesapeake and Ohio Railway Hospital Clifton Forge Va Mixed

Hospitals Approved for Additional Residencies

Gallinger Municipal Hospital Washington D C Urology
Hurley Hospital, Flint Mich Surgery
Kings County Hospital Brooklyn Neurology
Millard Fillmore Hospital Buffalo Obstetrics
Bellevue Hospital New York City Anesthesia
Charity Hospital Cleveland Pathology
Starling Loving University Hospital Columbus Ohio Gynecology
St Francis Hospital Pittsburgh Obstetrics gynecology
Roper Hospital Charleston S C Radiology

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ARIZONA *Basic Science* Tucson March 17 Sec Dr Robert L. Nugent Science Hall University of Arizona Tucson *Medical* Phoenix April 7 8 Sec Dr J H Patterson 826 Security Bldg Phoenix

CALIFORNIA Los Angeles March 9 12 *Reciprocity* Los Angeles March 18 Sec Dr Charles B Pinkham 420 State Office Bldg Sacramento

COLORADO Denver April 7 Sec Dr Harvey W Snyder 422 State Office Bldg Denver

CONNECTICUT *Regular* Hartford March 10 11 *Endorsement* Hartford March 24 Sec Dr Thomas P Murdock 147 W Main St Meriden *Homeopathic* Derby, March 10 Sec Dr J H Evans 1488 Chapel St New Haven

IDaho Boise April 7 Commissioner of Law Enforcement Hon Emmitt Pfost 205 State House Boise

ILLINOIS Chicago April 7 9 Superintendent of Registration Department of Registration and Education Mr Homer J Byrd Springfield

IOWA *Basic Science* Des Moines April 14 Sec Prof Edward A Benbrook Iowa State College Ames

MAINE Portland March 10 11 Sec Board of Registration of Medicine Dr Adam F Leighton 192 State St Portland

MASSACHUSETTS Boston March 10 12 Sec Board of Registration in Medicine Dr Stephen Rushmore 413 State House Boston

MINNESOTA *Basic Science* Minneapolis April 7 8 Sec Dr J Charney McKinley 126 Villard Hall University of Minnesota Minneapolis *Medical* Minneapolis April 21 23 Sec Dr Julian F Du Bois 350 St Peter St St Paul

MONTANA Helena April 7 Sec Dr S A Cooney 7 W 6th Ave Helena

NEW HAMPSHIRE Concord March 12 13 Sec Board of Registration in Medicine Dr Charles Duncan State House Concord

NEW MEXICO Santa Fe April 13 14 Sec Dr E LeGrand Ward Santa Fe

OREGON *Basic Science* Portland March 21 Sec Mr Charles D Byrne University of Oregon Eugene

RHODE ISLAND Providence April 23 Chief Division of Examiners, Mr Robert D Wholey 366 State Office Bldg Providence

WEST VIRGINIA Charleston March 16 State Health Commissioner Dr Arthur E McClue Charleston

WISCONSIN *Basic Science* Madison April 4 Sec Prof Robert N Bauer 3414 W Wisconsin Ave Milwaukee

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* May 6 8 June 22 24 and Sept 14 16 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

SPECIAL BOARDS

AMERICAN BOARD OF DEPMATOLOGY AND SYPHILOLOGY Written examination for Group B applicants will be held in various cities throughout the country March 14 Oral examination for Group A and B applicants will be held in Kansas City Mo May 11 12 Sec Dr C Guy Lane 416 Marlboro St Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada March 28 Oral clinical and pathological examination of all candidates will be held in Kansas City Mo May 11 12 Applications for the May examination must be received not later than April 1 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)

AMERICAN BOARD OF OPHTHALMOLOGY Kansas City Mo, May 11 and New York Sept 26 All applications and case reports must be filed sixty days before date of examination Test Sec Dr Thomas D Allen 122 S Michigan Ave Chicago

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Kansas City Mo May 11 Applications should be filed with the secretary on or before April 1 Sec Dr Fremont A Chandler 180 N Michigan Ave Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY Kansas City Mo May 9 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PEDIATRICS Kansas City Mo May 9 Sec Dr C A Aldrich 723 Elm St Winnetka Ill

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY St Louis Mo May 8 9 Sec Dr Walter Freeman 1028 Connecticut Ave Washington D C

AMERICAN BOARD OF RADIOLOGY Kansas City Mo May 8 10 Sec Dr B R Kirklin Mayo Clinic Rochester Minn

AMERICAN BOARD OF UROLOGY Kansas City Mo May 8 10 Sec Dr Gilbert J Thomas 1009 Nicollet Ave Minneapolis

Arkansas November Examination

Dr A S Buchanan, secretary, State Medical Board of the Arkansas Medical Society, reports the written examination held in Little Rock Nov 12 13 1935 The examination covered 12 subjects and included 120 questions An average of 75 per cent was required to pass Two candidates were examined both of whom passed The following school was represented

School	PASSED	Year Grad	Per Cent
Tulane University of Louisiana School of Medicine	(1935)	87	5

Nine physicians were licensed by reciprocity and 1 physician was licensed by endorsement from May 20 through October 21 The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Northwestern University Medical School	(1934)		Illinois
Kansas City Medical College Missouri	(1892)		Kansas

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Memphis Hospital Medical College	(1909)		Tennessee
Univ of Tennessee Col of Med	(1928) (1932) (1933)		Tennessee
Vanderbilt University School of Medicine	(1931)		Tennessee
Baylor University College of Medicine	(1931)		Texas

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Tulane University of Louisiana School of Medicine	(1931)		N B M E

Nebraska November Examination

Mrs Clark Perkins, director Bureau of Examining Boards, reports the written examination held in Lincoln, Nov 19-20 1935 The examination covered 10 subjects and included 87 questions An average of 75 per cent was required to pass Two candidates were examined both of whom passed The following school was represented

School	PASSED	Year Grad
Creighton University School of Medicine	(1934)	2

Six physicians were licensed by reciprocity from July 29 through October 17 The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Rush Medical College	(1934)		Indiana
Creighton University School of Medicine	(1932)		New Jersey
Western Reserve University School of Medicine	(1932)		Ohio
Jefferson Medical College of Philadelphia	(1930)		Michigan
University of Pennsylvania School of Medicine	(1927)		Penna
University of Texas School of Medicine	(1931)		Texas

Book Notices

Diet and Physical Efficiency The Influence of Frequency of Meals upon Physical Efficiency and Industrial Productivity By Howard W Haggard MD and Leon A Greenberg PhD of the Department of Applied Physiology in Yale University Cloth Price \$3 Pp 180 with 31 illustrations New Haven Yale University Press London Oxford University Press 1935

This well written monograph deals with that much neglected aspect of human nutrition the quantitative distribution of the daily diet into meals It comprises the report of a well conceived and carefully executed piece of research and also presents sufficient of the fundamental physiologic background to make the results and conclusions available to the general reader as well as to the trained physiologist The work was based on the initial premise that the distribution of the food intake among the conventional three meals a day is largely a matter of national habit and is determined by economic necessity and social usage rather than by scientific principles of nutrition The object of the research was to discover the best meal time interval and to establish the scientific principles for its being After demonstrating proper criteria in the laboratory and devising a suitable method for their application in industry, the authors were able to show that 'a high muscular efficiency is the objective and measurable accompaniment of a subjective feeling of well being and vigor, and that the rise and fall of this efficiency is correlated also with the rise and fall of productivity among factory operatives performing manual tasks' From their observations on the muscular efficiency and the 'pattern of productivity' of industrial workers engaged in the tasks at which they ordinarily earned their livelihoods, the authors have concluded that the usual practice in this country, of eating the day's supply of food in three installments does not permit the greatest vigor and efficiency of which the individual is capable Five meals a day (the total amount and quality of the food remaining the same) yields the maximum efficiency This volume should be of particular interest to employers of labor as well as to students of nutrition

High Blood Pressure and Its Common Sequelae By Hugh O (unewar dene MB BS DMPF Cloth Price \$3 Pp 172 with 11 illustrations Baltimore William Wood & Company 1935

This small volume presents a brief sketch of the major aspects of hypertensive disease It cannot be classed as a comprehensive monograph It reflects throughout the British background of the author and presents some original and apparently heretofore unpublished studies on the relationship of the arterial tension to habits of life The observation that the average arterial tension of the rickshaw men, or 'runners,' is notably

lower than the average for others of similar race but of most sedentary habits is interesting and thought provoking. The discussion of the etiology of hypertensive arterial disease as is all of the book, is remarkable for its unbiased sanity but is wholly incomplete. The presentation of the cardiac phenomena of hypertension is concise and clear. The analysis of the problems of renal function impairment as it occurs in hypertension merely touches the surface and leaves out much that should be incorporated. The description of the proper technique of sphygmomanometry is adequate and precise. The author's emphasis on the importance of the diastolic tension early in the book is well made, but he does not follow this concept further along. To be reminded of the frequency of hypertension in the tropics is of value for we are prone to take a somewhat provincial attitude against the American emphasis on hypertension. The author writes clearly and well. Where he has some original concept to present there appears enthusiasm and conviction that are lacking elsewhere. The chapters on apoplexy and on pulmonary edema are unusually well written. The book, although apparently intended for general consumption, appears to be too brief and sketchy to yield a really clear picture of hypertensive arterial disease to those whose work has not dealt extensively with the problems. For the internist it has little to offer that is new. More comprehensive American monographs, such as Fishberg's "Hypertension and Nephritis" (Lea & Febiger) and Steiglitz's "Abnormal Arterial Tension" (National Medical Book Company), cover the subject more fully and with perhaps a better placement of emphasis.

Malyariynaya terapiya nevrolyuesia i drugikh zabozevany nervnoy sistemy [By] P. A. Minlovich. Iz kliniki nervnykh bolezney Rostovskogo n. D. Meditsinskaya i kraevogo neuro-psikhiatricheskogo instituta. [Malarial Therapy of Neurosyphilis and Other Diseases of Nervous System]. Cloth. Pp. 209 with illustrations. Azov-Chernomorsk Regional Publishing Company. 1934.

This, the first monograph on the subject in the Russian language, presents an exhaustive discussion as well as an analysis of the author's experience with the method of malarial therapy. The author discusses indications, contraindications, the choice of the parasite, the technique of inoculation, the course of experimental malaria and the methods of terminating it. From ten to twelve paroxysms constitute one course. The literature concerning the results obtained in dementia paralytica is critically reviewed. The author's impressions are based on an experience with 1,000 cases treated by him in the last seven years. Of this number he was able to study and follow up 712 cases for from one to eight years. He feels that both the specific and the nonspecific therapy are indicated in the post-syphilitic diseases and in the refractory early cases of syphilis. Of the nonspecific agents he considers malarial therapy to be the most effective. Best results in dementia paralytica and in locomotor ataxia will be accomplished by an early diagnosis and timely application of malarial therapy. For some of those cases repeated courses of malaria will be advisable. The parasite best suited for repeated courses is the quartan. The effect of malarial therapy in nonsyphilitic diseases of the nervous system requires further observations. One might expect some improvement in cases of epilepsy with a syphilitic etiology and in the early cases of schizophrenia. The author stresses the necessity of establishing special centers for the rational application of malarial therapy and the study of associated problems. The appended exhaustive bibliography enhances the value of this excellent monograph.

A B C of the Endocrines. By Jennie Gregory. M.S. Foreword by Carl G. Hartman. Department of Embryology. Carnegie Institution of Washington. Cloth. Price \$3. Pp. 126 with illustrations. Baltimore: Williams & Wilkins Company. 1935.

The distinctive feature of this volume is the absence of text, the entire material being presented in charts and graphs. The diagrams and legends comprise a novel and interesting attempt to review in a simple and concise manner, the present status of endocrinology for the benefit of the general practitioner, the medical student and the intelligent layman. This method of presenting the hormone activities, the functional interrelationships of the various glands and the commoner glandular disorders compresses a remarkable amount of factual material and hypothesis into a small space. The method, however, does not lend itself to the ready distinction between fact and theory nor

does it allow for the use of the many reservations with which much of our present knowledge must be seasoned. The author has apparently made every effort to avoid misrepresentation by basing her material on the works of the acknowledged authorities in the field. Those who use this book for the purpose for which it was designed should find it extremely interesting and useful. It is not, however, intended to be a diagnostic or therapeutic manual, and practitioners who may be tempted to use it as such should be reminded, in the words of Pope, that "a little learning is a dangerous thing."

Lehrbuch der Gynäkologie. Von Prof. Dr. W. Stoeckel. Geh. med. rat. Direktor der Universitäts-Frauenklinik zu Berlin. Fifth edition. Paper. Price 33 marks. Pp. 760 with 531 illustrations. Leipzig: S. Hirzel. 1935.

The book primarily written by Fritsch has been so completely gone over by the present author, who wrote five editions, that it bears no resemblance to the original work either in text or in its external appearance. As in previous editions, the operative technique is considered by the author as beyond the scope of the book. In addition to having all the good qualities of the preceding edition, the present one may rightly boast of a painstaking revision of chapters on menstruation, uterine cancer, heat and light treatment, conception, sterility, methods of sterilization and female hygiene. Numerous new illustrations have been added. The constructive criticism may be limited to a few remarks. Little is said about trichomonas vaginitis, the treatment of this condition is not discussed separately, the author apparently applying the same therapy in any kind of vaginitis. The modern appliances for colposcopic examination are not described. The subject of lymphogranuloma inguinale is too briefly treated. One is disappointed with the bare mention of granuloma inguinale. The use of proprietary drugs not popular in foreign countries is regrettable from the point of view of non-German readers. One may deplore the paucity of discussion of the relations between the genital system and the various endocrine glands. Reproduction of photographs of nude patients with faces uncovered is not in keeping with good taste, at least according to views prevailing in the American literature. Except for a few such shortcomings, the book excels in every respect, especially the chapters on uterine cancer and myomas, ovarian cysts and tumors are real masterpieces. The various subjects throughout the book are presented in a clear, concise manner, the style is fluent, terse and easily readable. The book is replete with high grade illustrations and beautiful reproductions in color. The author's attitude toward the treatment of cancer of the cervix deserves attention. He advocates preoperative radium treatment and postoperative applications of x-rays and advises a surgical removal of the cancer because some tumors are radioresistant. He prefers Schuchardt's vaginal extirpation of the uterus to an abdominal hysterectomy. The chapter on x-rays has been written by Mikulicz-Radecki. This most modern and thorough book on gynecology is well worth adding to one's library.

The Bacteriology of Typhoid, Salmonella and Dysentery Infections and Carrier States. By Leon C. Havens. M.D. Director of Laboratories, Alabama Department of Public Health. Edited by Kenneth F. Macey. M.D. Foreword by Wilson G. Smillie. M.D. Cloth. Price \$1.75. Pp. 158 with 6 illustrations. New York: The Commonwealth Fund. London: Oxford University Press. 1935.

In this small volume the author has described his experience in those fields which were his main interests as director of the Alabama state laboratories. It is exceedingly regrettable that Dr. Havens' death occurred to end his work so early in life and before the publication of this useful handbook. The publishers are to be congratulated, however, on having the material presented under the editorship of Dr. Kenneth F. Macey. The various subjects discussed in the thirteen chapters are of particular interest to the laboratory worker and to the field epidemiologist whose work involves the investigation of these problems. To these workers especially the volume will serve a useful purpose as a reference handbook, since the author stresses the importance of the standard techniques and procedures accepted by most public health laboratories. While the review of the carrier problem and its relation to the control of typhoid is not as complete as one would desire, it does include a discussion of the most important aspects and particularly those applicable to the problem as it affects the Southern states. The considera-

tion of the Salmonella group is reasonably complete, giving emphasis to many laboratory and epidemiologic points incident to the full discussion of the bacteriology of this interesting and intricate group of "food poisoning" organisms. Undoubtedly this laboratory and field manual will be widely used not only by those investigating the related problems in the laboratory and in the field for state and local health departments but also in the field of medical education since the presentation is clear, concise and accurate thereby making the volume suitable for teaching purposes. The format is attractive and the paper and printing are excellent, in the usual manner of Commonwealth Fund publications, all making for a volume that is inviting to the reader.

Glands and Efficient Behavior. By Florence Miteer Ph.D. Director Merryheart Clinic Merryheart Schools Columbus Ohio. With an introduction by Max A. Goldzieher M.D. Endocrinologist of the Gouverneur Hospital New York. Cloth Price \$2.50 Pp 213 New York & London D. Appleton Century Company Inc. 1935

This is an enthusiastic dissertation, intended for lay consumption, on the relation of endocrine deficiencies to behavior problems in children and adults. The author is a psychologist who exhibits a commendable degree of skepticism in her own field. However, this critical attitude is not carried through the book, many unexpected lapses in judgment occur, particularly when the author invades little known territory in the realm of endocrinology. Many case histories are included these add to the interest but unfortunately not always to the scientific value of the treatise. Some of the therapeutic measures employed, such as calcium feeding and the administration of vitamin D bear a questionable relation to the subject of the book. The author appears to have more faith than present knowledge warrants in the oral administration of such glandular products as desiccated pituitary or parathyroid. While it contains some sound and valuable information, this volume will probably serve to mislead quite as much as to inform the unwary reader.

Diet Manual St. Mary's Hospital. Compiled by Sister Mary Victor R.N. B.S. Director of the Department of Nutrition St. Mary's Hospital Rochester Minnesota. Second edition. Cloth Price \$2.50 Pp 191 Rochester Minn. St. Mary's Hospital 1935

This edition, revised by Sister Mary Victor, constitutes a well organized outline of present-day diet therapy and is useful both to the doctor and to the dietitian. The organization of material has as its central idea the "optimum diet," with the therapeutic diet as a modification that still supplies all the nutritional essentials. Diet therapies for adults and those for children are treated in separate sections. The author has divided her material according to the conditions of disease which require treatment by diet. She outlines the general principles underlying the choice of food for each condition and lists the foods that may be used. A menu outline indicates how the average nutritive requirements may be satisfied with the foods allowed. Recipes for dishes suitable for diabetic diets are particularly helpful to the doctor or the dietitian who is looking for some ways to add variety to an otherwise rigid regimen. The material is well indexed and with the tables in the appendix it serves as a useful and compact manual of diet therapy.

Cardiac Output and Arterial Hypertension. By Sidney A. Gladstone M.D. Cloth Price \$1.15 Pp 56 with illustrations New York The Author 1935

This little volume is a collection of four individual papers rather than a monograph dealing with the subject as a whole. The first two papers present a critical outline of methods of determining the cardiac output in man by foreign gas inhalation. The third paper deals with an application of the author's modification to a study of the cardiac output in arterial hypertension. It is shown that the cardiac output is normal in the hypertensive state and that therefore it is concluded that the increased cardiac work which results in hypertrophy may be attributed solely to increased peripheral resistance. The fourth paper is a scholarly, critical analysis of the literature dealing with the pathogenesis of nephritic hypertension no new facts are presented. The philosophical discussion is interesting reading although many assumptions make one question the validity of the conclusions. For those deeply interested in investigative work on circulatory dynamics the book is worthy of study. It is not applicable or intended for general reading.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice Ischemic Paralysis Following Fracture of Humerus.—Dr Weeks, one of the defendants in this case, while visiting a patient in a hospital was asked to treat the plaintiff, a 6 year old child who had just been brought in in an emergency, because of an injury to her left arm. He diagnosed the injury as a fracture of the bone just above the elbow joint, reduced the fracture, and immobilized the arm with the elbow joint acutely flexed and the forearm supinated. The forearm was bandaged to the upper arm by 2-inch adhesive tape and was fastened to the chest wall with a sling made of the same material. Dr Weeks' services then ended, and the patient was returned to her home. From a dissenting opinion in this case, it appears that before the patient left the hospital Dr Weeks notified her mother of the danger of swelling and instructed her to notify her own physician at once if it occurred, and there is nothing to indicate that he did not do so.

During the night following the injury, the arm became swollen and painful, and on the following day the patient's parents called in Dr Salomon. He examined the arm and had roentgenograms made but apparently did nothing more. That night, because of the continued swelling of the arm, the patient's mother on her own initiative cut the bandage, but not completely through. The following day, on Dr Salomon's advice, she released the bandage and placed the patient's arm in a loose sling. On the third day after the injury a specialist, summoned at the instance of Dr Salomon, found that ischemic paralysis had developed. Blood blisters appeared at the wrist and elbow, and the tissues at those sites were infected, suppurated and sloughed. At the time of the trial, one and one-half years after the injury, the muscles had wasted and hardened so that the patient could flex her elbow only 90 degrees and her thumb 10 degrees, and her fingers were powerless. She presented the usual deformity incident to ischemic paralysis of this type and there was no possibility of improvement by medical aid.

Through a guardian appointed for that purpose, the patient sued both Dr Weeks and Dr Salomon. She made no complaint of Dr Weeks' diagnosis and reduction of the fracture, nor did she allege that he did not have the requisite skill and learning. Her sole complaint was that he was negligent in the application of that skill and learning in the treatment of her injury. The jury returned a verdict exonerating Dr Salomon and awarding damages against Dr Weeks. Dr Weeks thereupon appealed to the district court of appeal, first district, division 1 California.

In the course of the trial, to support her charge of negligence on the part of Dr Weeks, the plaintiff introduced the testimony of only one medical expert. He interpreted the roentgenograms that had been taken as showing that the elbow joint had been flexed as far as it could possibly go under pressure, that the forearm had been placed against the upper arm as close as it would go without being heavily forced, and that the bandage was too tight. On behalf of the physician-defendant, Dr Weeks two roentgenologists testified that the roentgenograms showed a degree of flexion usually used in the treatment of fractures such as the plaintiff had and that there was no undue pressure from the bandage. The opinion of the sole medical expert introduced by the plaintiff was further contradicted by the testimony of five medical experts and of the defendant Weeks himself. The defendant Weeks argued that he was not chargeable with negligence since the course he had pursued was approved by many experts and disapproved by only one. But the difference in the number of witnesses said the court, is a false quantity, since, under the California Code of Civil Procedure, "the direct evidence of one witness who is entitled to full credit is sufficient for proof of any fact," and the jury "are not bound to decide in conformity with the declarations of any number of witnesses, which do not produce conviction in their minds against a less number."

The defendant Weeks contended further that the plaintiff's medical expert witness had invaded the province of the jury when he stated his opinion as to the cause of the plaintiff's paralysis. But, said the court, quoting with approval *DeGroot v Winter* 261 Mich 660, 247 N W 69

When a result may or may not be occasioned by malpractice an expert medical witness invades the province of the jury when permitted to go beyond stating that it *could* and in saying that it *did* occasion the result. Such an opinion is but the private judgment of the witness and not competent evidence. Whether the alleged malpractice could occasion the result complained of was one of science only. Whether malpractice did occasion such result was in the controversy and therefore not one of mere science. When the facts are admitted and not in dispute the question if answered may be considered one of science. But when a result could have been occasioned by one of two or more causes the ultimate fact of which cause occasioned the result is for determination by the jury and a medical expert may not in case of conflicting evidence invade the province of the jury and testify that the result was in fact occasioned by one cause only.

The appellate court could find nothing in the record to show that the plaintiff's expert witness had transgressed the rule thus laid down.

The defendant claimed that the trial court erred in admitting in evidence, over his objection, enlargements of the roentgenograms that were taken. In rejecting this claim, the appellate court quoted 22 C J 918, as follows:

It is no objection to the admissibility of a photograph that it is enlarged showing the subject or object magnified where this does not have a tendency to mislead. Photographs of instruments already in evidence which are so enlarged as to make the proportions plainer and to illustrate the testimony of the witnesses may go to the jury in the same way as would a magnifying glass or microscope.

It is for the trial court to determine from the evidence before it whether enlargements of photographs already in evidence are correct representations thereof, and its ruling will be sustained unless it is apparent that there has been an abuse of discretion. Moreover, conceding that the enlargements in this case exaggerated and distorted the alignment of the bones, the defendant was not thereby prejudiced since there was no dispute as to the reduction of the fracture and no claim is made that the enlargements had a tendency in any other respect to mislead.

In the opinion of the appellate court, the nature and extent of the injury to the tissue, muscles and blood vessels of the patient's arm at the time of the fracture and the progressive development of injury to those parts following the emergency treatment given by the defendant Weeks, not only supported the jury's conclusion that paralysis was caused by trauma, arising from the treatment, but negated a conclusion that the paralysis developed pathologically and from internal pressure. The judgment of the trial court was therefore affirmed. The presiding justice, however, filed a dissenting opinion, concluding that the judgment was without evidentiary support and should be reversed.—*Sims v Weeks (Calif)* 45 P (2d) 350

Death from Hemolytic Streptococcal Infection Attributed to Debility Following Trauma—Deceased was struck by an automobile driven by the defendant May 31, 1930. She had a miscarriage and subsequently, notwithstanding treatment she had prolonged hemorrhages, became anemic, and lost vitality and strength. She was taken to a hospital Feb 12 1931. According to the report of the case she was not infected by hemolytic streptococci when she entered the hospital but was so infected while there. What the portal of infection was and the nature of its manifestation, the reported decision does not show. The first manifestation of infection appeared however February 17. The patient died Feb 19, 1931. Her husband thereupon sued the defendant charging him with liability for the death of the plaintiff's wife, because of the automobile accident eight and one-half months earlier.

There was medical testimony to show that a causal relation existed between the accident and the death, based on the theory that the hemorrhages from which the deceased suffered were caused by the accident and that they so lowered her vitality that she could not resist the subsequent infection by streptococci. The trial court charged the jury that they would be justified in finding that there was a causal relation between the accident and the death if they found that the accident caused

the hemorrhages, that because of those hemorrhages the deceased's vitality was impaired and her capacity to resist disease weakened, and that because of that lowered vitality infection by hemolytic streptococci occurred and caused death. The jury so found and returned verdicts in favor of the plaintiff in each of the several suits instituted by him. From these verdicts the defendant appealed to the Supreme Judicial Court of Massachusetts.

The defendant contended that the injury suffered as a result of the automobile accident was not legally the proximate cause of death. But, said the Supreme Judicial Court, a cause which in a continuous sequence, unbroken by any new cause, produces an event, and without which cause that event would not have occurred, is a proximate cause. It may be assisted or accelerated by other incidental and ancillary matters, but if it continues as an operative potent factor, the course of causation is not broken. If any injury progressively so reduces the general vitality of an injured person as to make him peculiarly susceptible to a disease which he contracts, the chain of causation, as a matter of law, is not broken.

If the negligent actor is liable for another's injury which so lowers the other's vitality as to render him peculiarly susceptible to the disease the actor is also liable for a disease which is contracted because of the lowered vitality.—2 Am Law Inst Restatement Torts Sec 458

The Supreme Judicial Court regarded the case as close, but in its opinion it could not quite be said that there was no evidence to support the verdicts of the jury. Accordingly, it allowed the verdicts in favor of the plaintiff to stand.—*Wallace v Ludwig (three cases) (Mass)*, 198 N E 159

Society Proceedings

COMING MEETINGS

- Alabama Medical Association of the State of Montgomery Apr 21 23 Dr D L Cannon 519 Dexter Avenue Montgomery Secretary
- American Association of Anatomists Durham N C Apr 9 11 Dr George W Corner 260 Crittenden Boulevard Rochester N Y, Secretary
- American Association of Pathologists and Bacteriologists Boston Apr 9 10 Dr Howard T Karsner 2085 Adelbert Road Cleveland Secretary
- American Association on Mental Deficiency St Louis May 14 Dr Groves B Smith Beverly Farms Godfrey Ill Secretary
- American Physiological Society Washington D C Mar 25 28 Dr A C Ivy 303 East Chicago Avenue Chicago Secretary
- American Society for Experimental Pathology Washington D C Mar 25 28 Dr Shields Warren 195 Pilgrim Road Boston Secretary
- American Society for Pharmacology and Experimental Therapeutics Washington D C Mar 25 28 Dr E M K Geiling 710 North Washington Street Baltimore Secretary
- American Society of Biological Chemistry Washington D C, Mar 25 28 Dr H A Matill Chemistry Bldg State University of Iowa Iowa City Secretary
- Arizona State Medical Association Nogales Apr 23 25 Dr D I Harbridge 15 East Monroe Street Phoenix Secretary
- Arkansas Medical Society Hot Springs National Park Apr 27 29 Dr W R Brooksher 602 Garrison Ave Fort Smith Secretary
- Federation of American Societies for Experimental Biology Washington D C Mar 25 28 Dr E M K Geiling 710 North Washington Street Baltimore Secretary
- Florida Medical Association S S Florida Apr 27 29 Dr Shaler Richardson 111 West Adams St Jacksonville Secretary
- Georgia Medical Association of Savannah Apr 21 24 Dr Edgar D Shanks 478 Peachtree Street N E Atlanta Secretary
- Iowa State Medical Society Des Moines Apr 29 May 1 Dr Robert L Parker 3510 Sixth Ave Des Moines Secretary
- Louisiana State Medical Society Lake Charles Apr 27 29 Dr P T Talbot 1430 Tulane Ave New Orleans Secretary
- Maryland Medical and Chirurgical Faculty of Baltimore Apr 28 29 Dr Walter Dent Wise 1211 Cathedral St Baltimore Secretary
- Missouri State Medical Association Columbia Apr 13 15 Dr E J Goodwin 634 North Grand Blvd St Louis Secretary
- National Tuberculosis Association New Orleans Apr 22 25 Dr Charles J Hatfield 7th and Lombard streets Philadelphia Secretary
- Nebraska State Medical Association Lincoln Apr 7 9 Dr R B Adams 15 N Street Lincoln Secretary
- New York Medical Society of the State of New York Apr 27 29 Dr Daniel S Dougherty 2 East 103d St New York Secretary
- Oklahoma State Medical Association Enid Apr 6 8 Dr L S Willour, 203 Ainsworth Building McAlester Secretary
- South Carolina Medical Association Greenville Apr 21 23 Dr E A Hines Seneca Secretary
- Southeastern Surgical Congress New Orleans March 9 11 Dr Benjamin T Beasley 478 Peachtree Street N E Atlanta Ga Secretary
- Tennessee State Medical Association Memphis Apr 14 16 Dr H H Shoulders 706 Church Street Nashville Secretary

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1926 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

51 1238 (Jan) 1936

- *Prophylaxis of Rickets in Premature Infants with Vitamin D Milk. L. T. Davidson, Katharine K. Merritt. New York and S. S. Chipman. Norwalk, Conn.—p. 1.
- Comparative Dextrose Content of Lumbar and Cisternal Cerebrospinal Fluid. A. Levinson and D. J. Cohn. Chicago—p. 17.
- *Creatinuria of Infancy and Childhood. I. Normal Variations. Creatine Tolerance Tests and Effect of Aminoacetic Acid in Normal Infants. Eleanor Marples and S. Z. Levine. New York—p. 30.
- *Seventh Nerve as a Possible Pathway for Transmission of Virus of Poliomyelitis. J. A. Toomey. Cleveland—p. 58.
- Obstructive Pulmonary Emphysema Due to Partial Obstruction of Bronchi by Tuberculous Lesions. M. L. Spivek. Chicago—p. 69.
- Cholesterol of Blood Plasma in Neonatal Period. W. M. Sperry. New York—p. 84.
- Blood Sugar Levels and Dextrose Tolerance in Experimental Poliomyelitis. C. W. Jungheut and Rose Resnick. New York—p. 91.
- Substances Involved in Coagulation of Blood of the New Born Infant. IV. Variations in Fibrinogen Content in Normal Infant. Marian M. Crane and H. N. Sanford. Chicago—p. 99.

Prophylaxis of Rickets in Premature Infants—Davidson and his associates gave eleven premature infants vitamin D milk, from cows fed irradiated yeast, during the first six months of life to determine how far they could be protected from rickets by this means alone. Clinical evidence of rickets was slight and when present appeared about a month later than it was noted in the roentgenogram. In only one instance was the calcium-phosphorus value found to be definitely lowered. By roentgenogram, two of the infants remained free from rickets throughout the period of study, the other nine showed rickets of mild degree from the third to the fifth month which had satisfactorily healed by the sixth month without a change in the antirachitic regimen. Vitamin D milk, when used in routine feeding as the sole antirachitic substance, is shown to be inadequate for the complete protection of the premature infant against rickets.

Creatinuria of Infancy and Childhood—Marples and Levine made a study of physiologic creatinuria and the influence of extraneous factors on such creatinuria in eight normal infants aged from 3 weeks to 7 months. The composite data were collected from a total of 129 days and gave the following results: 1 All the infants excreted creatine in the urine the creatine coefficients (mg of nitrogen per kilogram of body weight in twenty-four hours) varying from 0.3 to 5.14. The coefficients ranged from 3.74 to 5.78 with an average of 4.93. The total creatine coefficients (creatinine plus creatine) ranged from 4.82 to 10.5, with an average of 8.86 for the group of infants more than 1 month of age. 2 Age appeared to have no influence on the excretion of creatinine within the limited age range studied. Premature infants excreted practically no creatine, and this was also true for some very young full term infants. 3 Creatinuria of infants could be diminished by feeding diets low in protein but of adequate caloric value. It could be increased by feeding diets high in protein. The excretion of creatinine was not materially affected by these changes in diet. 4 Infants have a low tolerance for ingested creatine. From 55 to 65 per cent of the amount ingested was excreted in the urine as creatine in the first twenty-four hours and from 63 to 82 per cent in forty-eight hours. 5 The ingestion of aminoacetic acid increased the spontaneous creatinuria of infants but had no effect on the excretion of creatinine. Only a small fraction of the ingested aminoacetic acid was represented in the extra creatine excreted, and there was no specific quantitative relationship between the amount of aminoacetic acid ingested and the extra creatine excreted. 6 The ingestion of

sodium benzoate causes an initial increase in creatinuria, perhaps because of the increased protein metabolism caused by the benzoate, followed by a decrease to below the foreperiod level. The authors state that the study forms a background for an investigation of the effect of endocrine products on creatinuria, which will be reported subsequently.

Seventh Nerve and Transmission of Poliomyelitis—Toomey states that although the virus of poliomyelitis may be absorbed by any gray nerve fiber, the production of the clinical condition depends on the size of the absorbing nerve fiber and the nearness of it to the central nervous system. Although the skin contains gray fibers, it would take thousands of minimal paralyzing doses of the virus to produce the effect that a single dose of the same amount would produce after intracerebral injection into a monkey. The length of the chorda tympani nerve, the small size of this nerve, the fact that it is medullated and its devious course to the medullary area are factors that would tend to retard the virus from spreading to the medullary area. Many taste buds might absorb the virus and yet the disease might not be produced since the virus might be absorbed and its spread checked somewhere between the peripheral absorbing area and the nucleus of the nerve. Obviously, there are fewer cases in which the seventh nerve is involved than there are cases in which the spinal nerves are involved. Experimentally, however, such an entity can be produced in the *Macacus rhesus* monkey. This method of spread is not entirely hypothetical since the author has produced the same condition experimentally in the *Macacus rhesus* monkey when this avenue of approach was used. It is only when the virus can approximate the gray fibers by dilating the intestine that the disease follows. Many things may cause natural distention. Analogously, although he punctured the taste buds to achieve his purpose, he was able to demonstrate a condition in the experimental animal similar to that which appears in the human being. He concludes that the production of the isolated paralyzes of the muscles of the seventh nerve that occur as a result of poliomyelitis can be best explained by assuming that the point of entry is by way of the gastrointestinal tract, in this instance the gustatory fibers.

American Journal of Orthopsychiatry, Menasha, Wis

5 351 434 (Oct) 1935

- Comparison of Treatment Results in Various Types of Child Guidance Clinics. Helen Leland Witmer. Northampton, Mass.—p. 351.
- Psychogenic Factors in Some Cases of Reading Disability. Phyllis Blanchard. Philadelphia—p. 361.
- Prediction of Reading Disability Prior to First Grade Entrance. B. M. Castner. New Haven, Conn.—p. 375.
- Treatment of Functional Speech Disorders in a Medical Social Clinic. Implications for Treatment of Functional Disorders in General. I. P. Glauber. Central Islip, N. Y.—p. 388.
- Test for Types of Reaction to Frustration. S. Rosenzweig. Worcester, Mass.—p. 395.
- Incidence of Like Traits in One Hundred and Fifty Four Siblings and Fifty Cousins in a Group of So Called Normal Children. J. J. Michaels. Boston and Sylvia E. Goodman. Ann Arbor, Mich.—p. 404.
- Social Structure of Group of Kindergarten Children. Eugenia Harnmann. Worcester, Mass.—p. 407.
- Integrating Psychiatry with Education at the Anderson School. V. V. Anderson. Staatsburg, N. Y.—p. 411.
- Integrating Psychiatry with Education at Vassar College. Helen P. Langner. Poughkeepsie, N. Y.—p. 417.

California and Western Medicine, San Francisco

44 172 (Jan) 1936

- Surgical Treatment of Lesions of Stomach and Duodenum. F. S. Judd. Rochester, Minn.—p. 8.
- Surgery of Glaucoma. Mode of Action of Cycloidalysis. O. Barkan. S. F. Boyle and S. Maister. San Francisco—p. 12.
- Injuries of Posterior Urethra. H. W. Martin. Los Angeles—p. 16.
- Agranulocytic Angina. W. H. Johnston. Santa Barbara—p. 20.
- *Brain Tumors in Children. A. J. Scott Jr. Los Angeles—p. 25.
- Relapsing Fever in California. G. C. Burns. Walnut Park—p. 29.
- Thyroid Gland Ablation. Its Use for Congestive Heart Failure and Angina Pectoris. Report of Five Cases. J. H. Pettis and L. D. Sorsky. Fresno—p. 34.
- Corporations Cannot Practice Medicine in California. Recent Opinion Handed Down by a California District Court of Appeal—p. 36.

Brain Tumors in Children—Scott names gliomas, congenital tumors and tuberculomas as the three types of tumors occurring in children and divides the gliomas into spongioblastomas, medulloblastomas and astrocytomas. He states that in the differential diagnosis one must rule out brain abscess,

when there is a history of trauma, ear or mastoid operation, or sinus infection with or without operation, by the acute onset, increase in temperature and a leukocytosis. When vomiting occurs daily or at fairly frequent intervals, gastro-intestinal disturbances must be ruled out. The same applies to eye strain. This will sometimes cause morning vomiting. An eyeground examination should be insisted on when the eyes are being tested. If, on spinal puncture, the fluid shows old blood, one may suspect a hemorrhagic pachymeningitis, or, if fresh blood is present, the history should be studied carefully for trauma. When a child presents a gradual increase in irritability from no known cause, such as overfatigue, it is well to study the history carefully. A complete physical examination must be made, including a study of the eye and the eyegrounds. If a child who has been apparently normal becomes awkward in the use of his arms or legs, chorea must be considered and ruled out. Here there are usually the involuntary movements so characteristic of chorea. In the brain tumor case, the awkwardness varies when voluntary movements are attempted. Gastro-intestinal disturbance of a chronic nature may be suspected from the vomiting and headaches. Here too the careful history and physical examination and in addition possibly a roentgen study of the gastro-intestinal tract will help clarify this. The prognosis is always poor. Medulloblastomas are highly malignant and spread through the spinal fluid, where they become implanted in the spinal spaces. They are radiosensitive. The postoperative clinical course is from six months to five years. Treatment is surgical, followed by high voltage roentgen therapy in the case of medulloblastomas. The surgical mortality is high. A decompression may relieve the symptoms for a while.

Georgia Medical Association Journal, Atlanta

24 423 458 (Dec) 1935

- Hereditary Cleidocranial Dysostosis Report of Two Cases J C Massee Atlanta—p 423
Carotid Body Tumor Report of Case S Brock and I Pilot Augusta—p 425

Johns Hopkins Hospital Bulletin, Baltimore

58 1 58 (Jan) 1936

- Nutritional Edema in Dog III Salt and Augmentation of Tissue Fluid A A Weech E Goettsch and E B Reeves, New York—p 1

*Influence of Inadequate Treatment of Early Syphilis on Incidence and Incubation Period of Neurosyphilis J E Kemp Chicago and W C Menninger, Topeka Kan—p 24

*Pneumothorax Therapy in Lobar Pneumonia T J Abernethy F L Horsfall Jr and C M MacLeod New York—p 35

Neurosyphilis—Kemp and Menninger base their remarks on a study of 680 patients, in whom all necessary data are given and of whom 265 had neurosyphilis. 1 Early inadequate treatment (given within two years after infection) apparently does not increase the incidence of neurosyphilis with no treatment, neurosyphilis comprises 52.6 per cent of cases, and with early inadequate treatment it comprises 43.4 per cent of cases. 2 The incidence of neurosyphilis in males with no or inadequate treatment remains the same, i. e., 57.4 and 57 per cent in females the inadequate treatment group represents 32.2 per cent and in the group without treatment 50 per cent. 3 The incubation period of clinical neurosyphilis is reduced approximately five years in a group of early inadequately treated patients as compared with a group receiving no treatment i. e. from 19.2 to 13.1 years in males and from 14.9 to 8.7 years in females. 4 The incubation period of neurosyphilis is shorter in females than in males in both treated and untreated groups. The reason for this difference is not apparent from the study.

Pneumothorax Therapy in Lobar Pneumonia—Abernethy and his associates state that the introduction of large amounts of air into the pleural cavity with marked collapse of a pneumonic lung can be accomplished without serious harm to the patient. Although massive pneumothorax is necessary to effect relatively complete collapse of the consolidated lung it frequently causes an increase in dyspnea tachypnea and cyanosis. Pleural pain accompanying pneumonia is relieved after the introduction of a small amount of air into the pleural space but larger amounts frequently induce substernal pain. Certain changes in the systolic blood pressure following massive artificial pneumothorax appear to be related to the elevation of the intrapleural pressure. Massive pneumothorax did not

favorably influence the course of pneumonia in six early cases. Decompression or withdrawal of air from the pleural cavity after subsidence of acute symptoms permitted reexpansion of the lung and did not cause reactivation of the infection.

Kansas Medical Society Journal, Topeka

37 1 44 (Jan) 1936

- Partial Gastrectomy in Treatment of Gastric Ulcer and Cancer W M Mills Topeka—p 1
Carcinoma of Skin F G Bartel Newton—p 4
Aortic Arch with Anomalous Branches H B Latimer and P H Wedin Lawrence—p 8
*Blood Clot Culture as an Adjunct to Widal Test R L Laybourn Topeka—p 10
Some Experimental Findings on Blood Pathology M Gerundo Independence—p 14

Blood Clot Culture an Adjunct to Widal Test—Laybourn states that, because of the indefinite character of the early symptoms of typhoid, laboratory aids in diagnosis assume considerable importance. As a consequence, there is an unfortunate tendency to base the diagnosis solely on the Widal test (a test that is of no value until the disease is well advanced) to the exclusion of physical observations and histories. Both theory and practice have shown that the blood culture is the procedure of choice as an aid in the early diagnosis of typhoid. Of first importance is the fact that the typhoid bacillus can be isolated from the blood stream of practically all cases during the first few days of the illness—the time when the establishment of a definite diagnosis is of the most importance. The second point in favor of the blood culture is the fact that it gives more definite and conclusive evidence than is obtained from the Widal test, since the isolation and identification of the typhoid bacillus leave little room for doubt as to the cause of the illness. A third and most important point, so far as the prevention of the spread of typhoid is concerned, is the fact that typhoid bacilli can be isolated from the blood stream in mild and abortive cases of the disease, in which there might otherwise be little suspicion of a typhoid infection because of prompt recovery or atypical symptoms. Such cases are a greater menace to the health of a community than the clinically typical case. Both a blood and a stool specimen should be collected as early as possible in gastro-intestinal disturbances as an aid in the early diagnosis of both typhoid and bacillary dysentery.

Medicine, Baltimore

14 377 498 (Dec) 1935

- Carotid Sinus Syncope and Its Bearing on Mechanism of the Unconscious State and Convulsions Study of Thirty Two Additional Cases E B Ferris Jr R B Capps and Soma Weiss Boston—p 377
Intrapleural Pressure in Health and Disease and Its Influence on Body Function M Prinzmetal, St. Louis and W B Kountz San Francisco—p 457

New York State Journal of Medicine, New York

36 55 138 (Jan 15) 1936

- Sympathetic Ophthalmia Instructional Hour Notes on Pathology and Surgical Treatment B Samuels New York—p 55
Id Its Complications Surgical Treatment J F Gagner Rochester—p 59
Sympathetic Uveitis Results of Treatment with Diphtheria Antitoxin in Thirty Five Consecutive Cases F H Verhoeff and S R Irvine Boston—p 63
Allergy in Its Relation to Sympathetic Ophthalmia A C Woods Baltimore—p 67
Survey of Cases of Sympathetic Ophthalmia Occurring in New York State H H Joy Syracuse—p 85
Face Pain G H Hyslop New York—p 91
Traumatic Division of Transverse Colon and Complete Loss of Greater Omentum with Recovery Case Report V D Leone Niagara Falls—p 95
*Purpura Haemorrhagica with Intracranial Hemorrhage P H Garvey and D J Stephens Rochester—p 97
The Prostatic Problem Present Status H G Bugbee New York—p 102
Deafness Diagnosis Based on Functional Testing C M Brown Buffalo—p 109
Dermatitis Due to Card Table Cover Case Report H D Niles New York—p 113
Recurrence of Toxemia A J B Tillman New York—p 116
Severe Primary Dysmenorrhea Relief by Resection of Superior Hypogastric Plexus F S Wetherell, Syracuse—p 119

Hemorrhagic Purpura with Intracranial Hemorrhage—Since 1926, Garvey and Stephens have made a diagnosis of hemorrhagic purpura in thirty cases. Of these, ten ended fatally, in seven of which the cause of death was an intracranial

hemorrhage and was confirmed in five at necropsy. It has been their experience and that of others that the most common cause of death in hemorrhagic purpura is the development of one or more large intracranial hemorrhages. The cases can usually be divided into three groups: (1) those characterized by the sudden development of focal signs usually those of a hemiplegia, (2) those with meningeal bleeding presenting the usual symptoms and signs of subarachnoid hemorrhage and (3) the group of coma and convulsions. A fourth group might be added to include cases presenting the syndrome of cerebellar apoplexy. The cause of death in two of the authors' patients was a cerebellar hemorrhage. While cerebral hemorrhage is one of the feared complications of hemorrhagic purpura it does not necessarily imply a fatal prognosis. Several instances of spontaneous recovery from subarachnoid bleeding have been recorded. The treatment of the intracranial complications of hemorrhagic purpura is not satisfactory. As a rule, there is little that can be done to avoid a fatal termination in the apoplectic type in which the patient develops sudden and profound symptoms of intracranial hemorrhage. When symptoms are less severe, with evidence of meningeal bleeding or minor focal signs, transfusion and splenectomy may be considered. In several of the present patients, previous transfusions did not prevent the occurrence of intracranial hemorrhage. Splenectomy was apparently an important factor in the recovery of one patient in whom intracranial bleeding had occurred. Splenectomy is attended by a definite risk and in most types of secondary purpura as well as in some cases of idiopathic hemorrhagic purpura it is not effective in controlling the hemorrhagic phenomena.

Northwest Medicine, Seattle

35 138 (Jan.) 1936

- Basic Suggestions to the Oregon Profession A M Webster Portland Ore—p 1
The Surgical Management of Peptic Ulcer J A Wolfer, Chicago—p 5
Improved Clavicular Crutch Splint W Kelton Seattle—p 15
Internal Hemorrhoids Determination of Treatment A Crookall Seattle—p 18
*Carcinoma of Rectum Consideration of Methods for Lowering Operative Mortality with Especial Reference to Intraperitoneal Immunization S F Herrmann Tacoma Wash—p 20
Eradication of Hernia by Injection R C McDaniel Portland Ore—p 23
Significance of Gastro Intestinal Hemorrhage G W Millett Portland Ore—p 26

Carcinoma of Rectum—Herrmann asserts that proctoscopic examination is indicated for slight cancerous symptoms of the rectum. Only in this manner can early diagnosis of curable lesions be made. The earlier the diagnosis, the less complicated is the lesion, the higher the percentage of cures and the lower the mortality rate. A prolonged period of preoperative preparation is essential during which the colon is emptied, the fluid reservoirs of the body are filled and the glycogen reserve is improved. Peritoneal immunization can be accomplished by intraperitoneal vaccine. This offers protection against unforeseen accidents with fecal soiling of the peritoneum. Two cases are cited to prove the effectiveness of such local immunization. The operative procedure must be adapted to each case. An extensive abdominoperineal resection must be done in certain high lesions but it is inadvisable to apply this method to low rectal lesions that can be eradicated by posterior resection. The mortality rate rises with the technical difficulty of the operation. Destruction of inoperable or incurable rectal lesions by repeated electrocoagulation may replace palliative colostomy. Bowel action and consequent fecal soiling should be postponed as long as possible after the operation. This is accomplished by giving nothing by mouth for from two to four days while maintaining an adequate parenteral fluid intake. Morphine is indispensable. Early transfusion may be life saving, late transfusion is useless.

Oklahoma State Medical Assn Journal, McAlester

29 138 (Jan.) 1936

- Tumors of Nasal Accessory Sinuses Adamantinoma, Dentigerous Cysts and Osteoma Report of Cases A H Davis Tulsa—p 1
Blood Disorders in Children H Jeter Oklahoma City—p 5
Diarrhea W M Taylor Oklahoma City—p 8
Nonspecific Management of the Cancer Patient T G Miller Philadelphia—p 10
Sterility I N Charbonnet Tulsa—p 15
Chronic Glaucoma M K Thompson Muskogee—p 18

Pennsylvania Medical Journal, Harrisburg

39 223 296 (Jan.) 1936

- Industrial Dermatoses E D Osborne and E D Putnam Buffalo—p 233
*Experimental Production of Enlargement of Accessory Sex Organs in the Rat Preliminary Report J F McCahey D Soloway and L P Hansen Philadelphia—p 238
Treatment of Childhood Pneumonia in the Home E L Piper Pittsburgh—p 231
The Medical Fate of Pennsylvania's Unemployed After Jan 1 1936 G L Lavery Harrisburg—p 234
Treatment of Menstrual Disorders F C Hammond Philadelphia—p 235
Craves Disease and Pregnancy I Bram Philadelphia—p 239
Significant Factors Resulting from Studies of the Emergency Child Health Committee of Pennsylvania S M Hamill Philadelphia—p 241
Work of the Emergency Child Health Committee in Allegheny County H T Price Pittsburgh—p 244
Problem Cases in Refraction I S Tassman Philadelphia—p 247

Enlargement of Accessory Sex Organs in Rats—In studying the effect produced by long periods of union McCahey and his collaborators united, by parabiosis, twelve pairs of young mature male albino rats. Litter mates of approximately similar weights were united, and for each pair another litter mate was kept for control. In four pairs of castrates and noncastrates united for periods of from sixteen to eighteen days there were no marked gross changes in the accessory sex organs as compared to the normal litter mates. In five pairs united for periods ranging from twenty-seven to 210 days the accessory sex organs of the noncastrates were enlarged. This increase in size affected the penis, the glands connected with the prepuce, the ejaculatory muscle, Cowper's glands, the three portions of the prostate, the seminal vesicles and the vasa efferentia. Enlargement was also noted in a glandlike structure which arises from the vas near its entrance into the posterior urethra. The period of 210 days of union represents approximately one sixth of the life cycle of the rat. The fact that the testes responded to stimulation for this prolonged period as shown by the increased size of the accessory sex organs at the end of the experiment does not lend support to the theory of antihormone formation. In the pair united for 210 days and also in another pair that was united for 190 days there were marked changes in the testes of the noncastrate. Pronounced changes in the spermatogenic epithelium and the interstitial cells were present. Cross sections showed the tubules packed with spermatozoa, and the layers of spermatogonia and spermatocytes were increased in number. Longitudinal sections of the tubules showed loss of the wave of spermatogenesis seen in normal sections, no areas free of completely formed spermatozoa were observed. The interstitial cells were increased in size and number. Histologic sections of the enlarged ventral lobe showed a marked increase in the size of the acini, which were also dilated to an abnormal extent with secretion. The epithelium was definitely hypertrophied. In some areas the connective tissue seemed increased in amount.

Yale Journal of Biology and Medicine, New Haven

8 113 224 (Dec.) 1935

- William Beaumont's Rendezvous with Fame H Cushing New Haven Conn—p 113
Streptococcus Infection Occurring in Ferrets Inoculated with Human Influenza Virus I J Brightman New Haven Conn—p 127
Modern Treatment of Craniocerebral Injuries with Especial Reference to Maximal Permissible Mortality and Morbidity D Munroe Boston—p 137
Studies on Vitamin B Complex Further Indications for Presence of Third Factor R J Block New York and Rebecca B Hubbell New Haven Conn—p 169
Fat Embolism H H Groszklos Philadelphia—p 175

Studies on Vitamin B Complex—Block and Hubbell fed rats a highly purified diet supplemented with 1 mg of a vitamin B concentrate a day. More rapid and longer continued growth was observed when the antineuritic vitamin requirements were supplied by a concentrate prepared from rice polishings by alkali extraction of the material adsorbed on Lloyd's reagent than by the use of an equal number of units prepared by acid extraction. Thus, further evidence is presented that in addition to vitamin B₁ and B₂ another factor (or factors) in the vitamin B complex is needed for the growth of the albino rat. This "third factor" is present in rice polishings. It is adsorbed on Lloyd's reagent and is eluted by dilute sodium hydroxide but not by alcoholic hydrochloric acid.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Physical Medicine, London

10 125 142 (Dec.) 1935

- \ Rays in Chronic Rheumatic Arthritis. Diagnosis, Prognosis and Treatment. S. G. Scott—p. 127
Electrical Injuries. R. Kovacs—p. 129
Electrotherapy. W. Beaumont—p. 131
The Physics of Conduction of Electricity in the Human Body. B. D. H. Watters—p. 133
Fulguration and Diathermy Coagulation in Certain Superficial Conditions. C. H. C. Dalton—p. 134

British Medical Journal, London

2 1139 1190 (Dec. 14) 1935

- Treatment of Maxillary Sinus Suppuration. J. F. O. Malley—p. 1139
Present Position of Cesarean Section in Obstetric Practice. J. B. Banister—p. 1143
*Treatment of Chronic Nonspecific Arthritis with Intramuscular Injections of Sulfur. D. Krestin—p. 1144
Acute Benign Lymphocytic Meningitis (Acute Aseptic Meningitis). W. R. F. Collis—p. 1148
*Acute Free Perforation of Gallbladder. A. L. D. Abreu—p. 1150

Treatment of Arthritis with Sulfur—Krestin used intramuscular injections of sulfur suspended in oil in the treatment of fifty cases of chronic nonspecific arthritis. The cases are classified according to the main anatomic changes determined by clinical and roentgen examination showing the extent of synovial peri-articular and para-articular tissue and cartilaginous and bony involvement. Since the results of treatment appear to depend very considerably on the extent to which bone and cartilage are affected, the cases are divided into four groups: 1. The bone involvement is slight or absent. 2. The bone changes are moderate and such as can be detected only in roentgenograms. 3. The bone changes are advanced and can be detected without roentgen examination. In many of these, partial dislocation of the joint and deformity are present. 4. The involvement is osteo-arthritic, frequently affecting the larger joints and spine of elderly individuals, the soft tissues show little or no involvement. Five patients refused to continue treatment after the first or second injection. It was found that, although no group is debarrd from the prospects of some degree of recovery, the best results are to be expected in younger patients with relatively shorter histories and absence of advanced bony or cartilaginous damage. Improvement may be anticipated only in the soft tissues about the joints. When there is much wasting and contracture of the muscles the improvement will be less, and when deformity due to such changes combined with partial dislocation is present the chances of recovery become still less though pain and stiffness may be relieved. In about one fourth of the cases in which definite improvement occurred after treatment, symptoms subsequently returned. In these the relapsed condition was always less severe than that preceding treatment and in some it was quite mild. Simple therapeutic measures were generally sufficient to effect improvement. Recrudescence of symptoms occurred most often in groups 1 and 2 in which the patients were often younger and the disease had frequently been active and comparatively rapid in progress. In no instance was the disease made manifestly worse nor has any harmful effect been observed, provided a nonacute quiescent phase is chosen. Though induration and pain at the site of the injection sometimes occur, abscess formation has not been encountered. Treatment was not given during the acute phase of arthritis to elderly feeble or emaciated individuals to nervous hysterical or psychopathic patients to patients with active organic disease other than arthritis and to very obese patients. Improvement appeared to depend on the consistent occurrence of pyrexia and leukocytosis. The nature of such reactions is but little understood, but they seem to be associated with a general stimulation of metabolic processes and defense mechanisms.

Acute Free Perforation of Gallbladder—D. Abreu has observed free extravasation of bile three times in the last 116 cases of gallbladder disease encountered in his unit at operation or at postmortem examination (cases diagnosed as cholecystitis but not confirmed by operation have been excluded). Free perforation occurs most commonly in the elderly. Inflammatory disease of the gallbladder associated with calculi is

undoubtedly the cause of the condition. Although extensive gangrene of the wall associated with empyema has occurred in some cases, it is by no means always present. Age is a factor of great importance in the etiology of free perforation. A characteristic syndrome does not exist; few cases appear to have been diagnosed before laparotomy, acute cholecystitis, perforated gastric or duodenal ulcer, acute appendicitis, acute pancreatitis and intestinal obstruction have been simulated on several occasions. The safest guide to correct diagnosis lies in ceaseless vigilance when acute cholecystitis is being treated expectantly, especially in elderly patients, a rise of pulse rate associated with an increase in the area of abdominal tenderness must not be neglected. When uncertainty exists about the condition of a patient being treated expectantly for acute cholecystitis, laparotomy is desirable. Perforation can occur in a patient confined strictly to bed and on a fluid diet, as in one of the reported cases.

Lancet, London

2 1275 1334 (Dec. 7) 1935

- *Surgical Treatment of Aneurysms. W. H. C. Romanis—p. 12/5
Use of Complement Fixation Reaction in Diagnosis of Human Psittacosis. S. P. Bedson—p. 1277
*Artificial Pneumothorax for Relief of Acute Pleural Pain. C. Shaw—p. 1280
Artificial Pneumothorax in Management of Lobar Pneumonia. W. E. Robertson—p. 1282
Human Anthrax in Barotseland Treated with Novarsenobenzene. F. W. Gilbert—p. 1283
Treatment of Hemorrhagic Disorders with Vitamin C. H. Engelkes—p. 1285
Streptococcus Infection in Childbirth and Septic Abortion. Source of Infection and Grouping of Hemolytic Strains. Phyllis M. Congdon—p. 1287
Epidural Hemorrhage Due to Hemophilia Causing Compression of Spinal Cord. W. M. Priest—p. 1289

Surgical Treatment of Aneurysms—Romanis states that the aneurysms essentially suitable for surgery are those of the neck and limbs. The nearer the trunk the aneurysm is, the more difficult and delicate is its operative treatment. The cases described have all been treated by open operation, though certain aneurysms can be benefited by such other procedures as compression, needling, electrolysis and general medical measures. If it can be performed, the formal operation of excision of the sac with ligation of all branches entering it, as close to the sac as possible, and noninterference with the accompanying vein is the operation of choice. If it is impossible, a cure is often obtained by one of the other surgical procedures, the most promising being ligation of the main vessel immediately above the sac. Most of the so-called peripheral aneurysms occur in the flexures of the limbs, either in the popliteal space, Scarpa's triangle or the axilla. Many are associated with injuries. They are far more common in men than in women, but when seen in women they are usually associated with a positive Wassermann reaction, whereas this is by no means always the case in men. Certain aneurysms of this kind are, or in the past have been, associated with certain trades, such as the popliteal aneurysm seen in postboys and femoral aneurysm seen in butchers as a result of stabs in the thigh from their knives while sharpening them. Others are seen as a direct or indirect result of surgical procedures. The cases described are representative of arteriovenous aneurysms of the cavernous sinus of aneurysms of the carotid, internal iliac, innominate, femoral and popliteal arteries, of femoral arteriovenous aneurysms and of other aneurysms of the limbs.

Artificial Pneumothorax for Relief of Pleural Pain—Shaw believes that the pain of acute dry pleurisy demands removal in young patients on humane grounds. In the elderly this is imperative as a prophylactic measure against the occurrence of anoxemia and atelectatic pneumonia, which is so often fatal. The therapeutic methods in general use are only partially effective or dangerous. The induction of a shallow pneumothorax invariably relieves pleural pain and so removes anoxemia and atelectasis. The amount of injected air necessary is so small as to be quite harmless. Two cases are cited in which atelectatic pneumonia and anoxemia, secondary to pleural pain, suggested a fatal prognosis. Dramatic recovery followed the induction of an analgesic pneumothorax. In post-operative cases in which an abdominally initiated diaphragmatic paralysis enhances pulmonary basal atelectasis, the value of pneumothorax seems worthy of further research.

Journal de Radiologie et d'Electrologie, Paris

19 689 772 (Dec) 1935

- Precision Ionization Chamber for Absolute Measurement of X Rays Included in Wide Band of Wavelengths A Rogozinski—p 691
Anatomorontgenologic Study of Heart and Large Vessels by Opacity Method C Laubry P Cottenot D Routier and R Heim de Balsac—p 700
Wavelength and Specificity of Short Waves L Delherm and H Fischgold—p 709
*Twelve Years of Roentgen Therapy of Exophthalmic Goiter Gunsett Seeger Ritter and Schneider—p 713

Roentgen Therapy of Exophthalmic Goiter—Gunsett and his co workers report the late results of roentgen treatment of 100 patients with exophthalmic goiter. All but seventeen had received treatment more than five years before the follow up, and these seventeen had been at least three years under observation. Forty-four appeared personally for check up and the others were reached by writing. Of the forty-four who appeared thirty-two, or 72.7 per cent, were in excellent health; eight had only slight disturbances, three results were considered unsuccessful and one patient was operated on six months after the roentgen treatments. Forty-two of the fifty-six who wrote in were in excellent health, ten were not improved and four said that they were improved though not completely recovered. The authors believe that these results justify the use of roentgen rays in the treatment of exophthalmic goiter.

Presse Medicale, Paris

43 1953 1976 (Dec 4) 1935

- *Necessary Conditions Results and Technique of Arterectomy in Arterial Obliterations R Leriche and R Fontaine—p 1953
Sinocarotid and Cardio-Aortic Vasosensitive Zones in Determination of Sudden Death A Salmon—p 1956

Arterectomy in Arterial Obliterations—Leriche and Fontaine state that they have performed eighty arterectomies between January 1925 and May 1935. Nine were humoral, one cubital, three external iliac, sixty superficial femoral, five popliteal and two posterior tibial. They feel that, when the operation is performed for arterial occlusion, the artery, although having ceased to act as a vascular tube, continues to act as a vasoconstrictor nerve. This view has been confirmed both clinically and experimentally. It is necessary technically that the arterectomy should extend beyond the obliterated region both above and below. The operation is, however, inadvisable unless the obliteration is complete. Both above and below the arterial resection must respect the first permeable collateral vessel leaving it intact. The results in thirty-four cases of Buerger's disease were divided into five unknown, ten failures, seven temporary improvements, eight good results and four of less than a year's duration. The thirty-four operations performed for arteriosclerotic obliterations were divided into one death (by gas gangrene), five unknown, two failures, eight temporary improvements and eighteen good results, six of these being observed for longer than a year. Finally, the authors state that it is wise to close the operation with care as to hemostasis. Bleeding of the muscular arterioles is frequently seen almost immediately after the procedure is done. The arteriotomy is always rapid.

Archivio Italiano di Chirurgia, Bologna

11 637 772 (Oct) 1935

- Igneous Thyroiditis Experiments L Olper—p 637
Influence of Calcium Content in Diet on Evolution of Experimental Hypoparathyroidism P Cazzamali—p 662
Large Colic Transverse Hepatic Peritoneal Abnormal Ligament Associated with Agnesia of Great Omentum Case G S Donati—p 685
Arteriovenous Aneurysm of Superior Gluteal Artery Following Wound in War Case R Pecco—p 702
Fibers of Reticulo-Endothelial Tissues of Kidney in Normal and Pathologic Conditions A Trivellini and A Campanini—p 731

Calcium in Diet and Experimental Hypoparathyroidism—Cazzamali carried on experiments in thyroparathyroidectomized rats with the aim of ascertaining the influence the calcium content in the diet may have on experimental hypoparathyroidism. The animals in three different lots were given one of three different diets: diets almost deprived of calcium or with normal or increased calcium. The author concludes

that a hypocalcic diet increases the demineralizing action of thyroparathyroidectomy. The weight of the ashes of bones, viscera and soft parts of the organism of the animals which is lower in thyroparathyroidectomized than in normal rats is still lower in those which are given the hypocalcic diet. A diet with either a normal or higher than normal calcium content cannot control the progress of the demineralization caused by thyroparathyroidectomy, but it controls the clinical symptoms that follow it. The administration of the hypocalcic diet results in death of the animals, which rapidly develop cachexia and asthenia and die in tetany shortly in the evolution of the experiments. The administration of a diet with calcium content, either normal or increased, enables the animals to survive the operation. In these cases the manifestations of hypoparathyroidism which ordinarily follow thyroparathyroidectomy tetany included, do not make their appearance. The animal's life after the operation is almost normal except for a partial limitation of the somatic development which is probably due to the suppression of the thyroidal function.

Semana Médica, Buenos Aires

42 1973 2048 (Dec 26) 1935 Partial Index

- Pentavalent Arsenicals in Treatment of Congenital Syphilis R Cibils Aguirre and J de las Carreras—p 1973
*Index of Excursion of Uterus in Prolapse of Uterus O Jurgens—p 1987
Prognosis of Cutaneous Carbuncle R Consighiere—p 1994
Large Ulcer of Upper Lobe of Right Lung Cured by Phrenicectomy J F Mieres—p 2000
*Influence of Artificial Pneumothorax on Electrocardiograms I Natin—p 2002
Syphilitic Gumma of Tongue Case A Bigatti—p 2026

Index of Excursion of Uterus—Jurgens calls "index of excursion of the uterus" the distance in centimeters that the uterus held by forceps, can be displaced upward and downward from its normal location by means of light pushing and pulling movements. The normal index of excursion of the uterus is 4 cm (2 cm upward and 2 cm downward) in nulliparas and from 6 to 8 cm in women who have borne one or more children. In the last group of patients an index of 10 or 12 cm is found before appearance of prolapse of the uterus. In these cases the downward excursion is larger than the upward one. The existence of an index of excursion greater than 6 or 8 cm is of diagnostic value in latent or potential prolapse, by which the author means the relaxation of the muscles that support the internal genital organs and of the perineum a condition that precedes the onset and evolution of prolapse of the uterus. Latent prolapse is characterized by the disproportion between the intensity of the local and general symptoms on the one hand and the almost unnoticeable anatomic changes of the internal genitalia on the other. The symptoms of the condition are a sensation of relaxation of both the supportive and the perineal muscles a downward sensation of the genitalia disturbances of the gallbladder, lumbar pains and aching of the legs which become worse with physical exercise and are lessened with rest. The general symptoms consist of gastric and intestinal disturbances, headache nervousness and sometimes psychasthenia. The treatment of latent prolapse as well as of prolapse in evolution, consists in the performance of a corrective operation. The temporary use of pessaries is indicated, however as a preliminary treatment before an operation in certain cases such as in young married women and in women who refuse to be operated on. An advantage of the temporary use of pessaries is that incontinence of urine, which frequently complicates prolapse is made evident by the temporary reduction of the prolapse and can be corrected during the same operation.

Influence of Pneumothorax in Electrocardiogram—Natin made studies of the variations of the electrical axis of the heart in the electrocardiogram before and after artificial pneumothorax in thirty-two cases. He concludes that pneumothorax of the right side causes a shifting to the right of the electrical axis of the heart and horizontalization of the organ. The pneumothorax on the left side causes a shifting to the left of the electrical axis of the heart and verticalization of the organ. Parietal and diaphragmatic adhesions, when present,

maintain the heart and the hemidiaphragm in their position, thus preventing the appearance of changes of the heart and of its electrical axis in the electrocardiogram. The presence of an effusion on the right side of the thorax may cause an accentuation of the shifting of the electrical axis of the heart to the right in right pneumothorax and a neutralization of the shifting to the left and even appearance of the shifting to the right in left pneumothorax. If the heart takes the horizontal position as a result of the pneumothorax, its electrical axis shifts to the right, if it takes the vertical position its electrical axis shifts to the left. This fact was proved by the electrocardiograms obtained during discontinuation of pneumothorax. Slight changes of the heart do not make their appearance in the electrocardiograms or appear only when the electrocardiogram is taken in certain positions. Air insufflations may act either as the determining factors in the onset of extrasystoles or control them, probably by a mechanism of vagal stimulation. In reviewing the literature on the subject one finds that the opinions are conflicting. Some authors claim that the electrical axis of the heart shifts to the right in all cases of pneumothorax, while others believe that it does not change and still others state that its variations are irregular. Some authors report the observation of slight changes in the electrocardiogram after artificial pneumothorax, while others failed to find them. Natin's observations confirm those previously reported by Naunin and point out the erroneousness of the classic conceptions on the relation between the position of the heart and the direction of the shifting of the electrical axis of the heart in the electrocardiogram.

Munchener medizinische Wochenschrift, Munich

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Life Prognosis of Late Sequels of Traumatic Cerebral Lesions
H. Baum—p. 43

*Best Artificial Respiration and Necessity of Supplementing It by Cardiac Massage O. Bruns—p. 45

*Severe Burns with Phosphorus and Treatment W. Starz—p. 47

Vitamin D Sclerosis in Human Subjects W. Gerlach—p. 49

Congenital Amputations H. F. O. Haberland—p. 55

Methods of Artificial Respiration—In evaluating the methods of resuscitation, Bruns disregards those which employ machines and gives his attention only to the manual methods. He says that Silvester's method of artificial respiration is the best, because it introduces most air into the lungs and also effects a movement of the blood from the right to the left side of the heart. If a second person is available, the author suggests that this person, while sitting on the thighs of the unconscious person, perform cardiac massage according to the method of Maass-König, while the person performing the artificial respiration presses during the period of expiration the upper arms and the elbows of the unconscious person laterally against the thorax, instead of crossing them over the sternum. In the cardiac massage according to Maass-König, the thenar eminence of the open right hand is pressed in rapid succession into the region of the heart, approximately between the region of the apical beat of the heart and the left side of the sternum. The thrusts should be about 100 per minute. This rate eliminates the danger of exerting too great a pressure.

Treatment of Burns Caused by Phosphorus—After reporting the case of a man who sustained severe burns on the hands while breaking a bottle that contained phosphorus diluted in carbon disulfide, Starz points out that since phosphorus is used in gas warfare in the form of phosphorus fire bombs, the treatment of such injuries deserves attention. He shows that burns produced by phosphorus involve two destructive processes: the one is the direct action of the flames and the second is the corrosion of the tissues by the acid that is formed. In the treatment of phosphorus burns it is most important to put the injured part as soon as possible into a 5 per cent solution of sodium bicarbonate of approximately body temperature. However, this submersion should not be continuous, but the injured part should be lifted out from time to time so that the air can reach the lesion. This exposure to air facilitates the oxidation of the particles of phosphorus still adhering to the tissues. The solution of sodium bicarbonate on the other hand, makes possible the neutralization of the newly forming acid and thus reduces the pain. The dipping into the solution and

the exposure to air must be continued until the development of vapors of phosphorus pentoxide ceases and there is no longer a garlicky odor, phosphorescence or severe pain. After this has been accomplished, the customary treatment for burns is applied.

Sovetskiy Vestnik Oftalmologii, Moscow

7 577 736 (No 5) 1935 Partial Index

Amyloidosis of the Eye Case of Amyloidosis of Ciliary Edge of Lid N. V. Ochapovskaya Patsapay—p. 584

Arachnodactylia and Ectopy of Crystalline Lens P. E. Tikhomirov—p. 591

*Origin and Meaning of Ocular Symptoms in Exophthalmic Goiter S. A. Spector—p. 610

Magnet Operations V. I. Alekseeva—p. 624

Partial Transverse Transplantation of Corneal Layer M. A. Shterenberg—p. 637

Pathogenesis of Eye Symptoms in Exophthalmic Goiter—According to Spector, the ocular symptoms in exophthalmic goiter do not depend directly on the thyroid. The cause of both the enlargement of the thyroid and the ocular symptoms is a lesion of the diencephalic-hypophyseal system. The mechanism of the production of the symptoms is an increase in the tone of the corresponding muscles. Exophthalmos is the result of increased tonus of the oblique muscles of the eyeball caused by a lesion of the extensor center. The eyeball is pulled out rather than pushed out. Symptoms characteristic of exophthalmos resulting from retro ocular tumors, such as vascular changes and changes in refraction, are absent here. On the other hand there is present a tenderness at the point of attachment of the oblique muscles. The Mobius sign is due to the increased tone of the oblique muscles increasing the diverging position of the eyeball. Lid symptoms, the Dalrymple, von Graefe and Stelwag signs, are due to the increased tone of the superior levator muscle of the lid. The Joffroy sign depends on the increased tone of the frontal muscle. The author regards all these muscles as the upper half of muscles of facial expression the cellular elements of which are located in the floor of the third ventricle. These cell groups and the extensor center are under the toxic control of the hypophyseal and thyroid secretions. The effect of the thyrotropic hormone of the anterior portion of the pituitary is to cause enlargement of the thyroid. A vicious circle is thus formed, a lesion of any part of which may cause exophthalmic goiter. Rapidly developing eye symptoms in exophthalmic goiter point to a primary lesion of the brain centers and slowly developing symptoms to their depression. Improvement in eye symptoms after thyroidectomy can take place in slowly developing symptoms. In fulminant exophthalmic goiter, thyroidectomy does not bring about any improvement of the exophthalmos. Positive results can be obtained only through sectioning of the oblique muscles. Bilateral limitation of fields of vision following thyroidectomy is explained by a compensatory enlargement of the hypophysis. The latter apparently plays an important part in the etiology of exophthalmic goiter.

Hospitalstidende, Copenhagen

78 1299 1310 (Dec 31) 1935

*Observations in Diabetes Insipidus I Contribution to Diagnosis and Treatment of Diabetes Insipidus P. Hanssen and N. B. Krarup—p. 1299

*Observations in Diabetes Insipidus II Elimination of Creatinine and Urea P. Hanssen—p. 1306

Diagnosis and Treatment of Diabetes Insipidus—Hanssen and Krarup describe a case of primary polydipsia in illustration of the importance of examination of the urine either in single portions or by the concentration test before confirming the diagnosis of diabetes insipidus, and report six cases of diabetes insipidus of unknown pathogenesis all treated with dry and powdered posterior lobe of beef pituitary applied to the nasal mucous membrane with a small spray. Compared to injection treatment this method is effective, free from by-effects and economically advantageous.

Elimination of Creatinine and Urea in Diabetes Insipidus—Hanssen states that in four patients treated intranasally with powdered posterior pituitary lobe the filtration was unchanged and the elimination of urea considerably decreased during the treatment.

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RESUSCITATION OF THE NEW-BORN

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This study was prompted by the belief that many new-born babies are lost because of lack of proper treatment of asphyxia neonatorum. There has been little determined or concentrated effort to improve the method of accomplishment of normal breathing in its practical and universal application. In many maternity institutions there is still no standardized treatment or teaching of the modern conception of the theory and practice of resuscitation. Even modern textbooks on obstetrics continue to devote space and pictures to demonstrate methods of treatment that are no longer tenable. The names Byrd, Dew, Schultze, Silvester, Laborde and Prochownik belong, properly, to historical medicine.

ASPHYXIA NEONATORUM

The frequency of asphyxial fetal mortality is, indeed, difficult of estimation. Cruikshank¹ reports, after a very exhaustive investigation of postmortem examinations of 800 cases of neonatal deaths, that 68 per cent of these were due to asphyxia neonatorum and " allied conditions." In this study an attempt is made to evaluate with some degree of accuracy the incidence of the varying factors often causative, sometimes resultant and frequently only coincident. Birth injury, prematurity and developmental defects are often most difficult in their proper allocation. In contrast also with Cruikshank's study we define the neonatal period as fourteen rather than twenty-eight days. It is obvious that accurate inference is not always possible. In this analysis of 216 fetal deaths, eighty-seven of which were neonatal autopsies showed an incidence of pathologic respiratory conditions in 17.59 per cent. Atelectasis was present in twenty-two of these eighty-seven cases, an incidence of 25.28 per cent. Henderson² says that still-born and new-born deaths due to respiratory complications amount to four in 100.

Asphyxia neonatorum is as descriptive a designation of what occurs when a new-born child does not breathe properly as any that might be used. It is well understood that this condition is due to insufficient aeration or, more properly, insufficient oxygenation of the fetal blood. As Vandell Henderson has pointed out, the normal baby starts to breathe under essentially the same stimulus that causes an adult to breathe again after

holding the breath.³ The fetus does not breathe in utero because the proper equilibrium of its blood chemistry is maintained by the placental circulation. Fetal blood is too well arterialized to stimulate the fetal neurorespiratory center, which is difficult to excite while the lungs are atelectatic. Occasionally respiratory effort before birth may cause aspiration of a small amount of amniotic fluid which probably inhibits further respiratory effort and is readily absorbed in the alveoli.

Undoubtedly many reactions and reflexes play a part in the excitation of the neurorespiratory system, the most evident probably, is contact of air with the fetal skin and the mucous membrane of the airways. Other impulses, such as temperature, heat and cold gases or liquids, skin irritation, sprinkling posture or pain that is to say any of the various known peripheral stimuli, may initiate respiratory activity in the new-born.

At any rate, stimulation of the babies' skin and air passages by air normally activates the Hering-Breuer reflex, which determines inspiration and expiration. Oxygen determines the sensitivity of the neurorespiratory system to its specific stimulus, which is carbon dioxide. Extreme deficiency of oxygen in the fetal circulation paralyzes the system, according to Henderson. Oxygen may increase or disappear while carbon dioxide may also decrease. That there is a great increase in carbon dioxide, as has been supposed, probably is not often the case. The beneficial absorption of carbon dioxide disproves the conception of asphyxia as an acidosis. But that the change of chemical balance exerts a profound influence on the vital centers there can be no doubt. Obviously, the more profound the depression of the sensitivity of these centers, the stronger the stimulus required to excite respiratory activity, as seen when carbon dioxide from 20 to 30 per cent is used.

While there still exist doubt and controversy concerning the chemical nature of the blood in the normal and in the asphyxiated baby and the interchange of gases in normal lung ventilation, pending revision and confirmation of this physiologic activity, the contention of Henderson that the beneficial results of carbon dioxide administration demand its more universal usage in asphyxia should be urged. The insistence of Eastman,⁴ Kane and Kreiselman⁵ and others that the administration of carbon dioxide increases the "acidosis" of the asphyxiated cannot be reconciled with the clinical phenomena observed by so many.

Henderson describes three types of asphyxia, the apneic, the acarbic and the chronic. The apneic represents an intensive but brief deficiency of oxygen, the acarbic is characterized by a marked reduction of the blood alkali reserve secondary to insufficient carbon

¹ Cruikshank J N. The Causes of Neonatal Death. Medical Research Council Special Report Series 145, 1930.

² Henderson Vandell. Incomplete Dilatation of the Lungs as a Factor in Neonatal Mortality. J A M A 96:495 (Feb 14) 1931. See citation also 107:70 (Sept 8) 814 (Sept 15) 1934.

³ Eastman N J. Bull Johns Hopkins Hosp 50:39 (Jan) 1932.

⁴ Kane H F and Kreiselman J. Am J Obst & Gynec 20:826 (Dec) 1930.

dioxide stimulus and may show an acid excess, the chronic defines the condition when the respiratory center is depressed by a chronic lack of oxygen.

It might be of value in bringing this problem properly to the attention of the medical profession to emphasize, as Alan Moncrieff⁵ has done, that a large part of neonatal deaths during the first month of life might well justify the suggestion that the word "suffocation" is a false one. The terms "asphyxia" and "atelectasis" camouflage, rather than define, the true significance of fetal failure to breathe. That the respiratory failure at birth and at a later period of life is essentially the same, both in mechanism of production and treatment, there can no longer be any doubt. When a new-born baby does not breathe normally, it is fair to assume that one of two causes is present. Either there is a central anomaly, such as (1) immaturity, (2) intracranial injury or pressure, (3) chemical depression, due to narcotics, oxygen lack or carbon dioxide excess, secondary to improper arterialization of the center—as found in any circulatory or cord obstruction—or else there is a peripheral abnormality, such as immaturity

TABLE 1—Total Clinic Deliveries

	Infants	Resuscitated
Full term spontaneous	3631	90 (2.46%)
Full term operative	1064	115 (10.80%)
Premature spontaneous	100	12 (12.0%)
Premature operative	50	9 (18.0%)
(4% infants include 63 sets of twins)		
Resuscitation incidence		
Total infants		4.64%
Full term infants		4.347%
Premature infants		11.0%
Total infantile mortality in clinic	216 (4.438%)	
Total infants resuscitated		226
Infantile deaths in group		37 (16.371%)
Stillborn	8	
Deadborn (fetal heart lost just prior to birth)	6	
Neonatal	23	
Infantile mortality		
Includes all deadborn, stillborn and neonatal deaths to fourteenth day of life		
Standard of prematurity		
Weight 1.000 to 2.499 Gm. or total length 35 to 44.9 cm.		
Standard of full term		
Weight 2.500 Gm. or over or total length 45 cm. or over		

of the lung alveoli, developmental deficiency, circulatory failure, or the more common condition of obstruction somewhere in the air passages, which means delayed expansion of the lungs with the attendant improper ventilation.

In those cases of failure due to reasons of central origin, the history and clinical picture are fairly obvious, as, for instance, prematurity, prolonged labor, difficult or instrumental delivery, narcotics, prolapsed cord or congenital heart disease. In this class many babies may be saved.

But it is in the second group, failure due to obstruction in the upper respiratory passages, with which we are most concerned, for herein we believe lies the greatest opportunity to lessen the incidence of neonatal death. The frequency of obstructive material, mucus, amniotic fluid, meconium, vernix caseosa or epithelial debris is evident to every obstetrician and is almost always found in careful microscopic study of infant lungs at autopsy, as in the report of Farber and Sweet,⁶ in which 88 per cent of 124 unselected babies dying within the first five weeks of life showed aspirated material in the bronchioles and alveoli.

Another obstructive factor that needs consideration is the intrinsic adhesion of the alveoli in the solid fetal lungs before birth and the natural cohesive state of the bronchioles and bronchi. Coryllos⁷ has estimated that the resistance offered by these factors in the dog is equivalent to 14 cm. of water pressure. This resistance, or obstruction to the entrance of air, will vary, of course, with the type of baby, a weakly premature infant will present more resistance than a husky, well developed child. Flaccid atonic structures in the pharynx and larynx may offer obstruction to the free passage of air. Coryllos and Birnbaum⁸ have confirmed Keith's⁹ impression that the infant lung expands by "opening like a lady's fan" and have found that the effort to maintain normal ventilation of the lung is not as great as that required to initiate expansion. The force required to maintain adequate expansion and normal breath excursions is estimated at from 8 to 10 cm. of water. It is probably true that the forced expiratory effort, as when the baby cries, against a partially closed epiglottis contributes in a large measure to complete dilatation of the alveoli.

It is our belief that a maximum pressure of 25 mm. of mercury can be used with safety in infant resuscitation. The resistance and capacity of the chest walls make the likelihood of overdistention of alveoli very remote. The lack of evident lung trauma in our cases that came to autopsy seems to indicate that more complete expansion and greater pressure would enhance the success in the treatment of asphyxia of the new-born.

DIAGNOSIS OF ASPHYXIA

At birth, the diagnosis of asphyxia is quickly made by failure to observe any attempts at respiration or to note very feeble ones. Pulsation of the cord is usually present, but not necessarily, though the apex beat may be visible. Whether the baby is cyanotic ("livida") or white ("pallida") makes little or no difference. The condition is the same, although, generally speaking, the "white asphyxia" baby presents a more serious problem. Recognition of the fact that the two types may be the result of the same cause makes it obvious that the treatment will be essentially the same. The presence of mucus in the mouth, nose and pharynx may be easily evident. There may or may not be signs of attempted breathing, from an occasional weak gasp to a convulsive inspiratory spasm. Change in color may be seen, blue to white and even occasionally white to blue. Percussion and auscultation of the chest are of questionable value, except in cases in which incomplete expansion may persist over many days, and may even show in an early roentgen examination. Persistent impaired breathing may show the physical signs of pneumonic consolidation. Judging from the frequency with which we find partial atelectasis in neonatal lungs at autopsy, complete expansion of the lungs is a slow progressive process, taking many days, even in normal babies, as Wasson¹⁰ has shown.

Occasionally at birth the baby gives one cry and then immediately stops any further attempt at breathing. This condition is found especially in premature birth and is followed by fetal death unless vigorous resuscitation is instituted at once. When breathing begins

7 Coryllos P. N. Am J Obst & Gynec 21: 512 (April) 1931.
8 Coryllos P. N. and Birnbaum G. L. Obstructive Massive Atelectasis of the Lung. Arch Surg 16: 501 (Feb.) 1928.

9 Keith Arthur. Hunterian Lecture on the Mechanism Underlying Various Methods of Artificial Respiration Practiced Since the Founding of the Royal Humane Society in 1774. Lancet 1909 vol. 1.

10 Wasson W. W. A Roentgenographic Study of the Infant Chest as Seen at Birth. J. A. M. A. 83: 1240 (Oct. 18) 1924.

5 Moncrieff Alan. Lancet 1: 531 (March 9) 595 (March 16) 664 (March 23) 1935.

6 Farber Sidney and Sweet L. K. Amniotic Sac Contents in the Lungs of Infants. Am J Dis Child 42: 1372 (Dec.) 1931.

after treatment it is rapid and shallow, followed by intermittent weak attempts to cry, but the irregularity of its rhythm is characteristic

PROPHYLAXIS OF ASPHYXIA

Admittedly, asphyxia neonatorum is often unexpected and unpreventable. Improved obstetric care, however, will lessen the incidence of fetal suffocation. Proper antepartum and intrapartum treatment can eliminate many of the causative factors. The increased and indiscriminate use of medication for the induction or relief of labor undoubtedly contributes not a little to fetal morbidity and even mortality. Operative delivery may either cause or prevent asphyxia, it may be well indicated for the relief of fetal distress or it may be the reason for such distress.

There can be no doubt that prolonged labor, particularly when the membranes rupture early, increases the likelihood of asphyxia. Toxemia, difficult labor, instrumentation, the use of posterior pituitary extract or quinine, the frequent exhibition of sedatives, either narcotic as with opium and its derivatives or depressant as with barbiturates or allied drugs, all tend definitely to increase the incidence of asphyxia. Occasionally cord anomalies, such as knots or prolapse, or premature separation of the placenta, indicate special etiology in individual cases.

The prevention of asphyxia must include the judicious consideration of all these factors. We have analyzed 226 cases of resuscitation that occurred in the obstetric service of the New York Hospital from March 1, 1933, to Dec 31, 1934. Of 4,865 consecutive births, 226, or 4.64 per cent, required some measure of resuscitation. During this period the fetal mortality was 216, or 4.4 per cent. Of those who died, thirty-seven, or 17.1 per cent, received resuscitation treatment. It is evident that the problem of infant resuscitation is a matter of concern and a necessary attribute to the reduction of infant mortality. In an attempt to evaluate and correlate the factors concerned in asphyxia neonatorum and its prevention and cure a careful analysis has been made.

FULL TERM SPONTANEOUS DELIVERY

Of the total number, 3,651, of babies born at full term by spontaneous delivery, only ninety, or 2.465 per cent, required resuscitation. In this group of ninety there were six fetal deaths, an incidence of 6.33 per cent.

Primigravidae numbered fifty with four infantile deaths, while there were forty multiparas with two infantile deaths.

Normal pelvis were present in seventy of these ninety cases though there were five infantile deaths. Eight generally contracted pelvis showed one infantile death. Other types of abnormal pelvis showed twelve infants needing resuscitation, with no infantile deaths.

Left occipito-anterior presentations occurred in forty-four cases in which resuscitation was needed, with four infantile deaths. Thirty-one cases of right occipito-anterior presentations gave an infant mortality of 1. In three cases of left occipitotransverse presentation, one baby died.

Among the complications of pregnancy, two cases of intrapartum infection showed an incidence of two infant deaths, while toxemia of pregnancy (seven infants requiring resuscitation) showed an infant mortality of 1. The cord was about the neck in twenty-one cases requiring resuscitation with an infant mortality of 3.

In four babies requiring resuscitation, though they weighed less than 2,500 Gm there was no fetal death. In twelve weighing from 2,500 to 3,000 Gm there was one infant death. Sixty-four babies weighing from 3,000 to 4,000 Gm showed a mortality of 4 while in ten cases of infant weight of more than 4,000 Gm there was one death.

In all but five cases of the ninety deliveries, some form of anesthesia and analgesia was recorded. In the six infantile deaths, anesthesia was administered in all, and morphine also in two.

The membranes ruptured spontaneously in seventy-three of these ninety cases with six infantile deaths, while artificial rupture in seventeen was attended by no infantile death. Four babies died in sixty cases in which rupture of the membranes was known to have been not more than nine hours before birth.

In seventy-five deliveries in which the first stage was less than twenty hours, four babies died, with two

TABLE 2—Infantile Deaths in Ninety Full Term Spontaneous Deliveries

Case	Weight Gm	Condition at Birth	Methods of Treatment	Autopsy
1	3,450	No cry at birth	moderate mechanical stimulation	intra tracheal technique
		medicinal carbon dioxide oxygen	repeated in nursery later	
		Autopsy	Bilateral tear of the tentorium cerebelli	intracranial hemorrhage
2	3,640	Breathed poorly	no cry repeated mechanical stimulation	intra tracheal technique
		medicinal carbon dioxide oxygen	given 20 cc of whole blood	died at 24 hours
		Autopsy	Tear in falx cerebri	subdural hemorrhage
			bilateral bronchopneumonia	
3	2,620	No reflexes present at birth	liver large had mechanical stimulation	intra tracheal technique
		medicinal carbon dioxide oxygen	repeated in nursery later	died at 1 hour
		Autopsy	Partial atelectasis	extradural hemorrhage of cord
			pleural and pericardial effusion	ascites
4	4,400	Cyanotic at birth	had mechanical stimulation	intra tracheal technique
		medicinal carbon dioxide oxygen	repeated in nursery later	died at 2 hours
		Autopsy	Meconium in bronchioles	erythroblastosis
			ecchymosis and petechial hemorrhages	
5	3,150	Scalp face and lips cyanotic	prolonged intra tracheal technique	stillborn
		Autopsy	Partial atelectasis	
6	3,480	Never breathed	heart beat one minute	mechanical stimulation
		medicinal carbon dioxide oxygen	repeated in nursery later	intra tracheal technique
		Autopsy	Bilateral atelectasis	

deaths in fifteen cases in which the first stage lasted from twenty to fifty hours or over. One infant death occurred among twenty-six deliveries in which the second stage lasted from one to twenty-nine minutes, while five infants died in twenty-seven cases in which the second stages lasted from sixty to ninety minutes or more.

A brief summary of the six infantile deaths and autopsy are recorded in table 2.

OPERATIVE DELIVERY AT FULL TERM

Resuscitation therapy was done in 115 instances out of 1,064 operative deliveries at full term, an incidence of 10.8 per cent. Of these 115 cases the infant deaths numbered eighteen or 15.6 per cent.

Eight babies died in the delivery of sixty-seven primiparous mothers in whom resuscitation therapy was instituted. Of forty-seven babies born to multiparous mothers, ten babies died.

In seventy-five cases in which the pelvis was normal, eleven babies died, while in seventeen cases presenting generally contracted pelvis, two babies died. Ten cases of generally contracted pelvis showed an infant mortality of three.

Five babies died in thirty-six cases of left occipito-anterior presentation, four in eighteen cases of right occipitoposterior and three in twenty-one cases of breech presentation.

The greatest incidence of infantile deaths in the operative group were those of toxemia of pregnancy, in which four babies died in nine cases of toxemia.

TABLE 3—*Infantile Deaths in One Hundred and Fifteen Full Term Operative Deliveries*

Case	Weight Gm	Condition at Birth	Methods of Treatment	Autopsy
1	4 040	Low forceps heart irregular did not breathe cyanotic convulsions vomited blood	vigorous mechanical intra tracheal technic for twenty minutes mask (carbon dioxide oxygen) 20 cc of whole blood given	died 14th day Autopsy Bilateral lobar pneumonia bacteremia ruptured brachial plexus
2	3 500	Midforceps markedly asphyxiated mechanical intra tracheal technic for two hours edema of larynx from trauma causing obstruction	given 10 cc of whole blood died at 36 hours	Autopsy Wide tentorial tear partial atelectasis aspirated amniotic fluid
3	3 000	High forceps did not breathe for one and one half hours all methods of resuscitation used slow breathing began clonic contractions transfusion of 50 cc of citrated blood died at 36 hours	Autopsy Fracture of left clavicle hemorrhage under capsule of thymus	
4	3 490	Low forceps intratracheal technic infant deadborn (fetal heart lost just prior to birth)	Autopsy Hemorrhage in falx cerebri and tentorium cerebelli	
5	3 900	Bag induction version extraction gasped once before complete delivery fetal heart 40 per minute placenta previa intratracheal technic stillborn	Autopsy Petechial hemorrhages of scalp	
6	4 830	Breech extraction heart 60 per minute intratracheal technic for ten minutes stillborn	Autopsy Bilateral atelectasis	
7	3 910	Midforceps intratracheal technic deadborn	Autopsy Atelectasis rupture tentorium cerebelli bilateral	
8	2 830	Low forceps cyanotic all methods of resuscitation used deadborn	Autopsy None	
9	3 410	Breech extraction with forceps to aftercoming head cyanotic intratracheal technic deadborn	Autopsy Tentorial tears hemorrhage into cerebellum and left cerebrum	
10	3 900	Midforceps gasped twice only shoulders difficult to deliver intratracheal technic for fifteen minutes infant died in 15 minutes	Autopsy None	
11	3 830	Midforceps intratracheal technic no response deadborn	Autopsy None	
12	4 230	Low forceps intratracheal technic and intracardial atropine deadborn	Autopsy Hemorrhage into brain and cord bilateral hydrothorax no left umbilical artery	
13	3 400	Classic cesarean section no cry cyanotic mechanical intratracheal technic one hour before spontaneous respiration larynx and trachea mildly traumatized died first day	Autopsy Pericarditis pleural and pericardial effusion	
14	2 390	Breech extraction cyanotic weak cry mechanical suction oxygen by funnel died at 3 hours	Autopsy Congenital atelectasis partial absence of kidney	
15	4 260	Low forceps heart 40 per minute heart lost five minutes after birth intratracheal technic stillborn	Autopsy Post term stillborn fetus	
16	2 770	Midforceps sixteen hours after delivery resuscitated by intratracheal technic died at 23½ hours	Autopsy Tear of left tentorium cerebelli hemorrhage into falx cerebri	
17	2 830	High forceps limp no respirations intratracheal technic for one hour 20 cc of whole blood given died in 10 hours	Autopsy Subdural hemorrhage in brain and cord	
18	3 640	Midforceps heart heard intratracheal technic alphasol stillborn	Autopsy Bilateral tentorial tear subdural hemorrhage	

In fourteen cases of cord about the neck, the infant mortality was five. The cord was knotted in one case and prolapsed in four cases without mortality.

Infant weight showed a mortality of six in the group from 3,500 to 4,000 Gm, compared with four in the other groups.

In eighty cases of spontaneous rupture of the membranes there were twelve infantile deaths, while in thirty-five artificially ruptured there were six deaths.

As for anesthesia in thirty-one deliveries, seven babies died when gas and oxygen were administered. Five died when gas, oxygen, ether and some analgesic such as morphine, scopolamine or the barbiturates were administered to thirty-nine mothers.

Three infantile deaths occurred in twenty-seven cases in which the first stage of labor was from one to nine hours and seven in thirty-five cases in which the first stage was from ten to nineteen hours. In eight cases in which labor in the first stage was from forty to forty-nine hours, one baby died. There were eight infantile deaths in forty-one cases in which the second stage was from one to fifty-nine minutes and two deaths in eighteen deliveries in which the second stage lasted 150 minutes or more.

In fourteen cases of breech extraction the infant mortality was two. In thirty-nine cases of low forceps extraction the infant mortality was five. In thirty cases of midforceps extraction the infant mortality was six, and in four cases of high forceps application there were no infant deaths. In eight cesarean sections one baby was lost. Version in five cases was attended by one infant death.

A brief recording of the eighteen deaths in 115 operative deliveries is given in table 3.

PREMATURE DELIVERY

Twenty-one premature babies were delivered in whom resuscitation was done. Thirteen of these died. Three were of seven primigravidas and ten of eleven multiparas. Eight of these babies weighed 1,500 Gm or less, and five weighed from 1,500 to 2,000 Gm. A brief summary of the thirteen infantile deaths is given in table 4.

TREATMENT OF ASPHYXIA

The actual treatment of asphyxia is based on three fundamental concepts. First, open airways. That is, all obstruction must be removed, mucus, amniotic, meconium or other fluid must be removed by aspiration. Second, insufflation or distention of lung alveoli, which must be brought about. Third, stimulation of the neurorespiratory center with carbon dioxide after its sensitivity has been increased with oxygen.

It is fitting to recall that John Hunter in 1776 used a double chambered bellows, one for suction and the other for filling the lungs, according to Arthur Keith. Monro Secundus passed a catheter into the larynx by way of the mouth. Meltzer¹¹ and Auer in 1910 introduced the method of intratracheal insufflation, though pharyngeal insufflation was deemed more practical.

In case of long labor, toxemia, prematurity or necrosis or in any case in which fetal distress is diagnosed, preparations for infant resuscitation are imperative. When possible, the first step is the administration of oxygen and carbon dioxide to the mother early in the progress of her labor. At birth the gentle handling of the baby without haste is essential. Holding the baby by the feet with the head low in the air and gentle stroking of the throat toward the mouth will cause the expression of mucus or other fluid and make aspiration less likely. During this time inspection will show the fetal heart impulse and rate. Mild patting of the soles of the feet or placing a gauze-enveloped little finger in the mouth and pharynx in an attempt to remove mucus is occasionally attended by the onset of respiratory effort.

It is well to reiterate that undue haste is harmful. The apex beat and heart action require constant careful

11 Meltzer S. J. M. Rec. 92:110 (July 7) 1917.

observation There need be no alarm while pulsation is regular and strong A feeble, intermittent and slow cardiac activity is cause for uneasiness That irritation of the peripheral nerves, the cutaneous reflexes, as in moderate intelligent patting of the buttocks or soles of the feet, the occasional dorsal slit and retraction of the prepuce, or any pain stimulus is often the initiating excitant of respiratory effort is well understood Likewise, it is well known that overactive handling and employment of methods of artificial respiration are often traumatic to the point of fatality The postmortem finding of visceral hemorrhage is a matter of frequent record

Mention must be made of medicinal treatment of asphyxia neonatorum Lobeline has been used by us with rather indifferent results It is undoubtedly a definite respiratory stimulant, but according to Henderson, Moncrieff, Curtis and Wright¹² and others it is also a cardiac depressant It has been used in our series usually when all other efforts have failed, and in no instance have we ascribed success to its use

Coramine (pyridine-beta-carboxylic acid diethylamide) and icoril (meta-oxy-n-ethyl-diethyl aminomethylaminobenzol-chlorhydrate + meta-oxyphenyl propanolamine-chlorhydrate) have not been used in this series They, too, are stimulants of the respiratory center with perhaps less depressant action but may induce varying degrees of excitation from restlessness to twitchings or even convulsions Needless to say no drug therapy provides the fundamental clearance and patency of the air passages

While methods of artificial respiration are of some value and should be employed under emergency conditions, it is necessary to emphasize their inefficiency and to stress their danger Even mouth to mouth breathing may inflict serious injury, as in the fatal case reported by Emmert¹³ and referred to by Moncrieff Methods of forced or positive pressure insufflation with mask and pump are unsound in theory and unsafe in fact It must be remembered that one is dealing with the baby who is not breathing In the use of the many ingenious machines conceived for automatic and continuous insufflation, rhythmic alternation of positive and negative pressure, one must not lose sight of their limitations and liabilities

Apparatus of the types exemplified by Drinker¹⁴ Kreiselman, Von Wachenfelt and Morrison,¹⁵ or the more modern pulmotor called a resuscitator, are useful for prolonged passive respiration, particularly when insufflation of carbon dioxide and oxygen is incorporated as an essential feature of such instrumentation Mechanically controlled respiration is not precise, even in expert hands The rate, rhythm and depth of expiration and inspiration of a new-born baby are most variable Usually it is not possible to synchronize those factors or to determine just how a baby should breathe The rate and rhythm are determined by the need of the individual The blood chemistry exacts its own requirement and overregulation or underregulation of artificial respiration may well inhibit or impair this function There is bound to be more or less leakage around a mask Overdistention of the lungs and inflation of the stomach are obvious probabilities, but the

outstanding objection to such mechanical respiration is its failure to insure the first requisite clear and open airways

The method of resuscitation that has seemed most valuable to us has been the technic of direct exposure intubation and intratracheal insufflation of 10 per cent carbon dioxide and 90 per cent oxygen under measured pressure, as developed by Flagg¹⁶ When the mild measures have been unsuccessful, the baby should be placed on its back on a table It is not necessary for the head to be lowered to 15 degrees from the horizontal, as recommended by Blackley, nor is it wise for the head to be extended over the edge of the table With the infant type of direct vision laryngoscope the

TABLE 4—Deaths of Thirteen Premature Infants

Case	Weight Gm	Condition at Birth	Methods of Treatment	Autopsy
1	1690	Classic cesarean section	pallid weak cry moderate mechanical stimulation carbon dioxide oxygen constantly transfusion of 20 cc of citrated blood died at 9 hours	Autopsy Partial atelectasis
2	1310	Bougie induction of labor	mechanical intratracheal technic for thirty minutes carbon dioxide oxygen as required two transfusions of 30 cc of citrated blood died on 14th day	Autopsy Atelectasis edema of lung
3	1400	Spontaneous delivery	intratracheal technic difficult left side atelectasis diaphragmatic hernia died at 15 hours	Autopsy None
4	1310	Spontaneous delivery	cyanotic no cry intratracheal technic died at 3 hours	Autopsy Atelectasis
5	1110	Spontaneous delivery	all methods of resuscitation used stillborn	Autopsy Atelectasis
6	1310	Spontaneous delivery (placenta praevia)	mechanical intratracheal technic stillborn	Autopsy Atelectasis
7	1700	Spontaneous delivery	mask (carbon dioxide oxygen) cyanotic atelectasis intracranial hemorrhage died at 3 hours	Autopsy None
8 and 9	1400	(First twin) spontaneous	suction intratracheal technic died at 7 hours	Autopsy Partial atelectasis bilobed right lung
	1900	(Second twin) breech extraction	cyanotic intratracheal technic carbon dioxide oxygen constantly died at 7 hours	Autopsy Incomplete atelectasis bilobed right lung
10 and 11	1350	(First twin) spontaneous	did not breathe mechanical cyanotic died at 14 hours	Autopsy Atelectasis bronchopneumonia
	1370	(Second twin) breech extraction	did not breathe mechanical cyanotic died at 20 hours	Autopsy Bilateral atelectasis a piration of amniotic fluid
12 and 13	600	(First twin) breech extraction	intratracheal technic died at 13 hours	Autopsy Prematurity
	820	(Second twin) spontaneous	intratracheal technic died at 14 hours	Autopsy Partial atelectasis prematurity

tongue is easily depressed and the larynx exposed The pharynx is quickly cleansed of any mucus with the little sucker, and the laryngeal tube is introduced within the vocal cords and well into the larynx Again, the sucker is used to aspirate any contained matter, mucus or other fluid

When it is ascertained that all obstructive material has been removed, the laryngeal tube is connected with the gas tube and insufflation is begun

It is our opinion that there is a distinct advantage in the intermittent control of gas intake and output An attempt is made not to lead inspiration and expiration but rather to follow the rhythm once it has begun The continuous positive pressure advised by Blackley and Gibberd¹⁷ is the exercise of an artificial dominant

¹² Curtis F R and Wright S. *Lancet* 2 1255 (Dec 18) 1926
¹³ Emmert Fred. The Danger of Mouth-to-Mouth Breathing in Resuscitation of the New Born Infant. *Am J Dis Child* 39 1268 (June) 1930

¹⁴ Drinker Philip and McKhann C F. The Use of a New Apparatus for the Prolonged Administration of Artificial Respiration. *J A M A* 92 1658 (May 18) 1929

¹⁵ Mollison W M. *Lancet* 2 888 (Oct 14) 1933

¹⁶ Flagg P J. Treatment of Asphyxia in the New Born. *J A M A* 91 788 (Sept 15) 1928. *Am J Obst & Gynec* 21 537 (April) 1931

¹⁷ Blackley J B and Gibberd G I. *Lancet* 1 736 (March 30) 1935

control over the interchange of gases, and inhibition of function may result. Rhythmic and conditioned support of respiratory effort is what is needed.

We believe that the practice of this technic has saved babies when all other methods have been or would have been in vain. We know of no baby that has been or might have been saved after failure of this technic, by the employment of any other method.

INJURY DUE TO INTRATRACHEAL TECHNIC

We have endeavored to ascertain the frequency, extent and consequence of trauma resulting from intratracheal insufflation. In the 160 full term babies there was a known incidence of trauma in six cases, or 3.75 per cent. It is probable that injuries were not evident in other cases. In two cases of spontaneous delivery, evidence of abrasion of the pharynx and trachea was apparent, though both babies were discharged well. Of four cases in the operative group, two babies at autopsy showed tracheal trauma and laryngeal edema, one with pericarditis and pleural and pericardial effusion, the other showed a wide tentorial tear, partial atelectasis, and aspiration of amniotic fluid. In the other two

TABLE 5—*Injury Due to Intratracheal Technic*

Full term spontaneous delivery	
Case 1	Traumatic tracheitis bronchitis discharged well
Case 2	Abrasions two on oft palate discharged well
Full term operative delivery	
Case 1	Larynx and trachea mildly traumatized intratracheal 1 hour died at 24 hours
	Autopsy Pericarditis pleural and pericardial effusion trachea intact
Case 2	Pharynx and hard palate excoriated swollen oozing fresh blood pneumonia discharged well
Case 3	Edema of larynx from trauma causing obstruction intratracheal for two hours died at 36 hours
	Autopsy Wide tentorial tear partial atelectasis aspiration of amniotic fluid trachea not unusual
Case 4	Excoriated posterior pharynx intratracheal for five minutes discharged well
Intratracheal technic used in 160 full term infants	
Incidence of injury 6 cases 3.75% (It is probable that other patients sustained some minor trauma insufficient however to cause recognizable signs or symptoms)	

babies, both of whom were discharged as well, there were evidences of pharyngeal and tracheal trauma, excoriation and edema. In no case of this series was there proof that the trauma of insufflation was extensive or even a contributing factor in infantile death.

CONCLUSION

More careful study and recording of the factors relative to the incidence, causation and treatment of asphyxia neonatorum should be the continuous duty of every maternity service.

In our opinion, the method of direct exposure intubation and insufflation of oxygen 90-95 per cent and carbon dioxide 5-10 per cent is the treatment *par excellence* because of its ease of application and its beneficent results.

30 East Fortieth Street—520 East Seventieth Street

Yellow Fever in Laboratory Personnel—Unusual precautions are necessary to prevent the infection of laboratory personnel with yellow fever virus from infected mice. Three such infections are known to have occurred. We have considered it necessary to limit the personnel working in the rooms in which the mice are inoculated and the brains removed to persons known to have become immune to yellow fever as the result of an attack of the disease or through vaccination—Sawyer, W. A. and Lloyd Wray. *The Use of Mice in Tests of Immunity Against Yellow Fever*, *J. Exper. Med.* 54: 533 (Oct.) 1931.

THE PHILADELPHIA AND ALASKA STRAINS OF INFLUENZA VIRUS

EPIDEMIC INFLUENZA IN ALASKA 1935

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Influenza occurred in mild epidemic form in a number of cities of the United States during the winter of 1934-1935.¹ In and about Philadelphia the disease was prevalent during December 1934 and January 1935. Adults who had been through the pandemic of 1918-1919, as well as children, were attacked. Characteristically the disease was mild but was followed by malaise and fatigability apparently out of proportion to the acute febrile illness. The clinical picture was typical of influenza. There was leukopenia affecting chiefly the polymorphonuclear neutrophils, and in fatal cases hemorrhagic edema of the lungs. Abstracts of two fatal cases representative of a larger number follow.

CASE 1—Rachel R., aged 17, admitted to Bryn Mawr Hospital² Dec. 14, 1934, died December 16, was a high school girl and had had thirteen previous admissions to the hospital because of diabetes. Three days before death the patient had loss of voice and a cough of the productive type with greenish brown expectoration. The second day of the disease the patient became quite dyspneic and felt as if she were choking. At the same time she had fever, severe general malaise and prostration. On the second day of the disease the patient's temperature was 102.2 F and the maximum temperature the day of death was 103. The pulse varied from 100 to 130 and respirations from 16 to 24. A white cell count on the third day of the disease showed white blood cells 6,300, metamyelocytes 1 per cent, rod nuclears 50 per cent, polymorphonuclears 28 per cent, lymphocytes 8 per cent, monocytes 11 per cent and eosinophils 2 per cent. On the same day the blood sugar was 140 mg per hundred cubic centimeters and the carbon dioxide 35 volumes per cent. The roentgenogram of the chest on the third day of the disease showed no evidence of consolidation in the lungs. Owing to the great difficulty of respiration a bronchoscopic examination was performed immediately on admission to the hospital. Five small pieces of thick hemorrhagic mucus were removed and cultures were taken. The patient grew steadily worse and died on the early morning of the fourth day of the disease. An autopsy performed six hours after death showed an acute hemorrhagic tracheobronchitis, a diffuse confluent hemorrhage pneumonitis resembling grossly, in the judgment of the pathologist, the lesions seen in the 1918 epidemic. Cultures showed few pneumococci and few hemolytic streptococci. *Haemophilus influenzae* was not found. Microscopic examination of the lungs showed intense congestion, serofibrinous infiltration of alveoli with numerous erythrocytes and occasional desquamated endothelial cells, but no polymorphonuclears. Changes typical of an acute hemorrhagic bronchitis were found.

CASE 2—B. S., admitted to the Hospital of the University of Pennsylvania Nov. 27, 1934, had onset of respiratory symptoms November 23, which had become steadily worse. Physical examination revealed many rales but no definite evidence of consolidation. The temperature ranged from 101 to 104. The patient was placed in an oxygen tent. Examination of the sputum showed no pneumococci. Blood examination showed 70 per cent hemoglobin and 6,200 white blood cells, which fell to 2,400 next day. Citrated blood, 200 cc., was given by veno-

¹ From the Department of Bacteriology, University of Pennsylvania School of Medicine.

² Collins, S. D. and Gover, Mary. Influenza and Pneumonia in a Group of about Ninety-Five Cities in the United States During Four Minor Epidemics, 1930-35, with a Summary for 1920-35. *Pub. Health Rep.* 50: 1668-1689 (Nov. 29) 1935.

³ For this case we are indebted to Dr. Max M. Strumia of the Bryn Mawr Hospital.

chysis. The patient became irrational and died on the evening of November 28. The clinical diagnosis was bronchopneumonia (influenza?).

Examination of the respiratory tract at necropsy disclosed the following. The mucosa of the bronchial tree was extremely engorged and the lumens of the smaller branches were choked with a mucopurulent exudate. The lungs were heavy, each weighed 700 Gm. Both had mottled dusky, smooth surfaces, and a crepitant, boggy consistency. The cut surfaces were very wet and dripped copious amounts of serosanguineous fluid. No definite consolidation could be seen but in many areas a somewhat firmer consistency could be felt.

On microscopic examination of sections from various areas the structure of the lung was found to be obscured by an extensive serous and hemorrhagic exudate containing a varying cell content in different parts of the section. In some areas the alveoli were solidly packed with red cells, elsewhere moderate numbers of large mononuclear cells and polymorphonuclear leukocytes were seen. In still other parts threads of fibrin were mingled with serous fluid. Secondary invasion of staphylococci had taken place. The mucosa of the bronchi was deeply congested and parts had undergone superficial necrosis.

A virus was recovered by Dr. Thomas Francis Jr.³ from the sputum of patients in Philadelphia in the acute stage of influenza. This virus produces experimental influenza in ferrets and mice.

The influenza epidemic of the winter of 1934-1935 in the United States was "characterized¹ by its small size, its definiteness in all areas except the Pacific, and the rapidity of its spread. The Middle Atlantic section attained its peak in the week ended January 5, and five neighboring sections had peak mortalities during the succeeding week. The West South Central and the Mountain areas had later and less definite peaks. The largest total excess rates occurred in the East South Central, South Atlantic and Mountain regions."

Seattle did not have an outbreak of influenza in the winter of 1934-1935 but there were sporadic cases.⁴ Since Seattle is the gateway to Alaska from the United States, it is probable that the disease was carried to Alaska through that city. Influenza reached southeastern Alaska in the late fall of 1934 and worked its way westward and northward during the winter. Mortality from uncomplicated influenza was not high, but in the associated pneumonias the mortality was great. The statistics reproduced in the accompanying table were kindly furnished in July 1935 by Dr. W. W. Council, Territorial Commissioner of Health.

Influenza and Pneumonia Mortality in Alaska

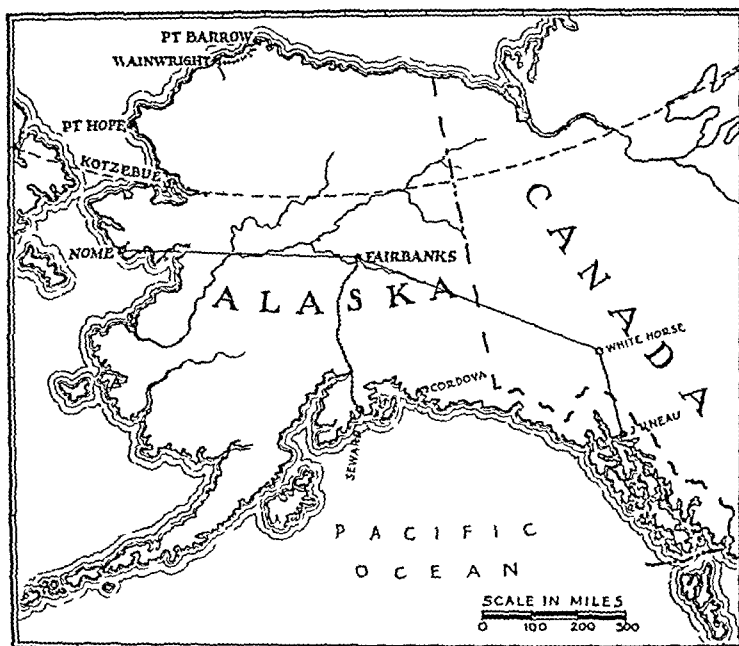
	Influenza 1933	Pneumonia 1933	Influenza 1935
First division	6	81	62
Second division	10	21	72
Third division	6	37	248
Fourth division	6	22	6
Total	28	170	111

Autopsies coming under Dr. Council's observation were of postinfluenzal pneumonias. These all showed multiple abscesses and many adhesions between the visceral and parietal pleurae.

³ Francis Thomas Jr. and Magill T. P. Immunological Studies with the Virus of Influenza. *J. Exper. Med.* 62: 203-216 (Oct.) 1935.
⁴ Newcomb Bryan, M.D., C.H., a physician to the commissioner, Seattle, per personal communication to the author.

The isolation of communities during the Alaskan winter afforded an unusual opportunity to trace the means of spread of influenza. The disease followed the lines of airplane travel and can be traced from Fairbanks to Nome thence to Kotzebue, thence to Point Barrow and thence (doubling back by dog sled) to Wainwright.

Influenza reached Fairbanks on Jan. 15, 1935. There were approximately 500 cases with five deaths, all due to postinfluenzal bronchopneumonia. The Fairbanks epidemic was comparatively mild with few complicating pneumonias, but the estimated mortality from the pneumonias that occurred was about 50 per cent. During the winter months, two or three airplanes fly each week between Fairbanks and Nome.⁵ There is also air travel between Nome and Kotzebue approximately every ten days. Influenza began in Nome after the outbreak in Fairbanks and was carried to Kotzebue, where it per-



LINES OF COMMUNICATION
 — SCHEDULED LINES OF THE PACIFIC ALASKA AIRWAYS
 - - - SPORADIC AIR TRAVEL
 * * * DOG TEAM TRAVEL
 — RAIL ROADS
 — STEAMSHIP TRAVEL

Points in Alaska involved in the 1935 epidemic of influenza

sisted until the first part of May. There were no deaths in Kotzebue, but the morbidity was high.

On April 8, 1935, a party of three men⁶ left Fairbanks by air for Point Barrow by way of Kotzebue. A stop of several days was made at Kotzebue during the time of prevalence of influenza there. Influenza appeared in Point Barrow on April 15.⁶ None of the party contracted influenza. The assumption is that one or more acted as healthy carriers to the Eskimos. The morbidity at Point Barrow was high, with a mortality of fifteen persons, mostly old Eskimos, in a population of about 300. The epidemic started at Wainwright, 90 miles southwest of Barrow, about ten days after it reached Point Barrow and is attributed to a party of Eskimos who went from Barrow to Wainwright by dog sled. Some of these became ill with influenza on the trip; others after their arrival. There were no deaths at Wainwright although the morbidity was high.

⁵ Gillespie, Floyd Burke, M.D., Fairbanks, Alaska, per personal communication to the author.

among the 200 Eskimos. The difference in mortality between Point Barrow and Wainwright may have been due to the difference in the treatment of the patients. At Wainwright each patient was required to remain in bed in his own igloo until he recovered. At Point Barrow the patients crowded to the doctor's office every day even when they had high temperatures, some coming over the ice from outlying igloos. Point Hope which was isolated by its location and little if at all visited during the epidemic period, had no influenza.

At the request of Dr R R Hyde of Johns Hopkins Hospital Dr Greist of Point Barrow collected throat washings from influenza patients preserved in 50 per cent glycerin. These were brought out to Fairbanks by Dr F B Gillespie who gave them to Pacific Alaska Airways for shipment to Baltimore. The virus was recovered from these samples pooled by Dr Thomas Francis Jr of the Rockefeller Institute for Medical Research.

Samples of convalescent serum were obtained by Drs Pettit and Pepper from sixteen Eskimos and one white man at Kotzebue. Three of these patients were 17 years of age or younger. The others were all old enough to have been through the 1918 epidemic, which visited Kotzebue as well as other Alaskan towns. Drs Pettit and Pepper had been sent by the Department of Bacteriology of the University of Pennsylvania School of Medicine to collect serum and virus, but as it turned out acute cases as a source of virus were not available on their arrival. Their flight to Alaska was in part contributed by the Pan-American Airways in cooperation with the United Airlines and the Alaska Steamship Company. They completed their trip of eleven thousand miles in fifteen days from Newark to Newark. The convalescent serum has been distributed to the several laboratories currently engaged in influenza research. Some has been preserved in "lyophile" form⁶ for later test.

Reports of comparison of serums collected in Great Britain with serums from the Philadelphia and Alaska epidemics have been published by Andrewes, Laidlaw and Wilson Smith.¹¹ Reports of comparison with other serums from America will be published by Francis and Magill.⁸ The data obtained lend themselves to the following interpretation.

About half the adults in the British and American urban populations thus far sampled have protective antibodies against the influenza virus at present prevalent in those countries. Those attacked are individuals with less than average humoral resistance, these individuals, however, in early convalescence from attack develop protective antibodies.

The Alaskan influenza virus obtained from Point Barrow in April 1935 has been shown by Francis⁹ to be immunologically identical with the virus recovered by him from Philadelphia cases in January 1935 and from the epidemic in Puerto Rico in September 1934.¹⁰ These New World strains appear to be immunologically identical also with strains recovered in Great Britain in 1933, 1934 and 1935 by Laidlaw, Andrewes and

Wilson Smith.¹¹ A virus has also been recovered by Burnet¹² from an epidemic in Melbourne, Australia, in June 1935. This strain is neutralized by high dilutions of horse antiserum against the British W S strain. The virus strains recovered from human influenza have been shown to be immunologically related to but not identical with the virus of swine influenza.¹³ There is much evidence to suggest that the swine virus may be the pandemic strain of 1918 adapted to swine.¹¹

The virus that has been the primary etiologic agent of human influenza in widely separated areas of the world during recent years would appear, then, to be a single immunologic entity. Both active and passive immunization of susceptible animals against this virus have been shown to be possible. These facts should offer profound encouragement for the ultimate control of this last and greatest uncontrolled pestilence and should challenge the best efforts of preventive medicine to perfect practicable means of active and passive immunization before the coming of the next pandemic.

THE TREATMENT OF CIRCULATORY FAILURE

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For many years it has been taught that in infectious fevers, when the pulse becomes rapid and tends to be thready and the heart sounds become muffled, the heart is failing. Heart stimulants are indicated, for one must support by all means the failing heart. When one turns to textbooks on medicine in the sections on treatment of the various infections one finds it stated that when the heart fails cardiac stimulants should be administered, the chief of which is digitalis in some form. Others such as caffeine with sodium benzoate, camphor and epinephrine, are mentioned. This idea has been taught for so many years that it has become almost axiomatic. Physiologists have known that this is not true and as long ago as 1899 Romberg and Paessler¹ showed in animal experiments that the heart does not fail even in fatal infections with the diphtheria bacillus, pneumococcus and streptococcus.

When bacteria invade the body and set up disease, certain histamine-like substances are formed, which circulate in the blood. From the work of Dale and Laidlaw³ it is known that histamine produces arteriolar precapillary contraction with capillary dilatation, a condition known as secondary shock. If the capillary dilatation is great enough, the animal bleeds to death into its own vessels.

The first result of any infection with bacteria is increase in the body temperature, which increases body metabolism. The pulse rate increases slightly or greatly, the blood flow is increased in order to take care of the increase in metabolism. The minute output is greater

11 Laidlaw P P Epidemic Influenza A Virus Disease Lancet 1 1118 1124 (May 11) 1935

12 Burnet F M Influenza Virus Isolated from an Australian Epidemic M J Australia 2 651 653 (Nov 9) 1935

13 Smith Wilson Andrewes C H and Laidlaw P P Influenza Experiments on the Immunization of Ferrets and Mice Brit J Exper Path 16 291 302 (June) 1935 Francis Thomas Jr The Immunological Relationship Between the Viruses of Human and Swine Influenza J Bact 31 37 (Jan) 1936 Shope R E The Susceptibility of Swine to the Virus of Human Influenza J Bact 31 37 (Jan) 1936

Read before the Medical Society of Milwaukee County Nov 8 1935.
1 Romberg Ernst and Paessler Hans Untersuchungen über die allgemeine Pathologie und Therapie der Kreislaufstörung bei akuten Infektionskrankheiten Arch f klin Med 64 62 1899

2 Macleod J J R Physiology in Modern Medicine ed 7 St Louis C V Mosby Company pp 312 314

3 Dale H H and Laidlaw P Histamine Shock J Physiol 52 355 (March) 1919

6 Flo dorf E W and Mudd Stuart Procedure and Apparatus for Preservation in Lyophile Form of Serum and Other Biological Substances J Immunol 29 389 425 (Nov) 1935

7 Andrewes C H Laidlaw P P and Smith Wilson Influenza Observations on the Recovery of Virus from Man and on the Antibody Content of Human Sera Brit J Exper Path 16 566 582 (Dec) 1935

8 Francis and Magill Personal communication to the authors

9 Francis Thomas Jr and Magill T P Cultivation of Human Influenza Virus in an Artificial Medium Science 82 335 334 (Oct 11) 1935 and personal communication to the authors

10 Francis T and Magill T P Isolation of Influenza by a Filtrable Virus Science 80

The blood pressure may or may not be influenced, but it is apt to be slightly reduced, as the result of mild vasodilatation. The veins are full, return flow to the right auricle is not disturbed and the circulation becomes adjusted to the abnormal conditions. This is the circulatory response to all mild or moderately severe infections. One does not interfere by giving various drugs, if one is wise, for the body seems fully capable of restoring itself to health without active assistance. The great majority of infections belong to this group. Venous return flow is adequate to produce ventricular filling.

Now, a step further and the infection becomes severe, the pulse becomes more rapid and smaller, the blood pressure drops, the first sound at the apex of the heart becomes faint. These are the usual textbook signs of the failing heart. Now let us ask what has happened. Are these signs of a failing heart or are they signs of peripheral dilatation? Is it conceivable that an organ with such a reserve power as the heart has, an organ that, given oxygen and dextrose and insulin, can beat almost indefinitely outside the body, an organ that beats from before birth to old age, is likely to fail within a few days or weeks? Isn't it much more probable that the explanation for the so-called failing heart is to be found elsewhere than in the heart itself?

Strong muscle contraction depends on the load placed on it. Starling's law is that the strength of a muscle contraction is dependent on the length of the fibers. This holds true unless the muscle is overstretched. Heart muscle is no exception to this rule. The stimulus is always the same, but the strength of contraction depends on the diastolic filling of the ventricles, particularly the left ventricle, with blood. This assumes an adequate, constant venous return flow from the periphery.

The volume of blood in circulation then takes on great interest. The blood in the body is not all circulating all the time, so that what is important is the actual circulating volume of blood. There are huge depots, storage areas, where great quantities of blood can stagnate and be wholly useless as a carrier of oxygen. The liver, the splanchnic area, the subcapillary capillary skin plexus⁴ normally are the great storage areas. Under pathologic conditions the lungs can hold out a large amount of circulating blood.⁵

In recent years it has been learned that the one condition common to both primary and secondary shock is decreased circulating blood volume.⁶ As Moon has recently tersely stated the problem: "The shock syndrome results from a disparity between the volume of blood and the volume capacity of the vascular system."

Experiments performed by many investigators have shown that in secondary shock there are (1) decreased blood volume (2) lowered blood chlorides (3) hemoconcentration and (4) lowered arterial blood pressure.

It has been shown that increase in chlorides favors phagocytosis and this increase may be as little as 0.01 per cent.⁷

Since adequate venous return flow which produces diastolic filling is absolutely essential to good heart contraction it follows that when the histamine-like substances formed in severe infections produce marked

dilatation of capillaries, much blood will be held out of circulation. Further, the toxic products of bacterial action on tissue cells cause increased capillary permeability, so that fluid exudes into the tissues and because of stasis is not reabsorbed.

Thus water is lost in the tissues and blood is concentrated. It follows logically that venous return flow must be decreased and the heart receives less blood to pump. But the circulation must be maintained. The heart then beats rapidly in order to keep up the minute volume, but a less than normal amount is thrown into the aorta at every systole. The heart beats faster and faster, the pulse becomes smaller and smaller. Severe parenchymatous degeneration, which is largely water imbibition in the cells, takes place, thus further reducing blood volume. The heart now is embarrassed. It is doing its best to keep up the minute volume of the circulation against a dilated periphery and with less forceful beats because the ventricle is not stretched at each diastole. In fact, the heart instead of dilating actually becomes smaller. Now another factor enters the picture. The heart has its blood supply from the coronary arteries. During diastole the coronaries are filled.⁸ The only recuperating time of the heart is in diastole. When the heart beats rapidly and weakly because it has less and less blood to force out, the coronaries receive less and less blood and the recovery time for muscle nutrition becomes shortened. The heart must have oxygen and dextrose in order to beat. It is almost impossible to deplete the heart of dextrose, but the oxygen becomes less and less. Anoxemia, lack of oxygen, is the only known condition that produces dilatation of the heart.⁹ (I am not discussing heart failure in heart disease.) Just before death the heart dilates, it gets too little oxygen. The pathologist at autopsy sees the dilated, flabby heart and he has said for years that the heart is dilated in acute infections. He is wrong. As long as there is during life sufficient venous return flow, sufficient oxygen for the heart, the heart does not dilate. Dilatation is the antemortem failure of the heart caused by collapse of the peripheral circulation.

When Romberg and Paessler¹ showed in 1899 that the functional capacity of the heart was not materially changed in severe experimental infections they thought that vasomotor tone was lost. Since then many investigators have shown that there is no loss of vasomotor tone. The absolutely essential factor is decreased circulating blood volume due to stasis in the storage areas and transudation into the tissues as the result of increased capillary permeability.

Many physicians have seen the lungs in a case of rapidly fatal influenzal pneumonia. They are enormous, do not collapse and are so full of fluid that they drip when taken out of the thorax. One can wring water from them as one wrings water from a soaked sponge. Everywhere are petechial hemorrhages showing capillary damage. Underhill¹⁰ found that in the influenzal pneumonia patients the blood concentration was so great that hemoglobin estimations as high as 140 per cent were not infrequent. How can the heart carry on the circulation when the blood is so concentrated that it cannot flow back into the ventricles in sufficient quantity to stretch them?

⁴ Wellheim, F. r. t. Zur Funktion der subpapillaren Gefässplexus in der Haut. Klin. Wochenschr. 6: 2154 (Nov. 5) 1927.

⁵ Moon, A. H. The Shock Syndrome in Medicine and Surgery. Ann. Int. Med. 8: 163 (June) 1915.

⁶ Blalock, Alfred, and Beard, J. W. and John, G. S. Experimental Shock. A Study of Its Production and Treatment. J. A. M. A. 97: 184 (Dec. 12) 1911.

⁷ Fleming, Alexander. On the Effect of Variations of the Salt Content of Blood on Its Bactericidal Power in Vitro and in Vivo. Brit. J. Exper. Path. 7: 274 (Oct.) 1926.

⁸ Smith, F. M., Miller, G. H. and Gruber, V. C. The Relative Importance of the Systolic and the Diastolic Blood Pressure in Maintaining the Coronary Circulation. Arch. Int. Med. 38: 109 (July 15) 1926.

⁹ Katz and Long, quoted by Weiskopf, J. C. Modern Molecular Physiology and Circulatory Failure. Ann. Int. Med. 6: 506 (Oct.) 1932.

¹⁰ Underhill, F. P. and Ringer, Michael. Blood Concentration Changes in Influenza. J. A. M. A. 75: 1531 (Dec. 4) 1920.

PATHOLOGY

Congestion of abdominal viscera and increased moisture in the various organs have been repeatedly observed by prosectors in the bodies of persons dying of all types of infection. The significance of the increased wetness has not been sufficiently appreciated. In both experimentally produced secondary shock and in that of death from infections, similar microscopic observations are made. There are marked dilatation and engorgement of the capillaries and venules in all the organs, particularly the intestine. Tissue edema is present in greater or lesser degree and petechial hemorrhages show capillary damage. The capillaries would appear to be more permeable to fluid transudation. Loss of fluid produces hemoconcentration. Moon¹¹ says

The shock syndrome results most frequently from dilatation of capillaries and venules plus leakage of plasma through capillary walls whose permeability has been increased. This feature has been present in shock from diverse causes. In the experiments which produced low blood pressure by simple vascular dilation without capillary injury, shock did not result. A simple loss of blood or of plasma, the vascular walls remaining normal, does not progress but tends to restoration by physiologic processes. Fluid is absorbed from the tissues, or that supplied therapeutically is retained in the circulation. In shock the reverse is true. Fluid is neither absorbed nor retained and further loss by vomiting, diarrhea, effusion and by edema is progressive.

One concludes that increased capillary permeability is an essential factor in the mechanism by which shock progresses.

TREATMENT

Since the heart itself does not fail but the peripheral circulation collapses and blood volume and venous return flow to the heart are lessened, the logical treatment would be to increase the blood volume or venous return flow in any way possible. There are three methods by which one may theoretically accomplish this end: (1) postural or mechanical, (2) by employing fluids intravenously, (3) by employing drugs that act on the peripheral vessels, either to constrict them or to decrease capillary permeability or both.

1. Many years ago I¹¹ could show that in typhoid, when the pulse became rapid and of low volume, elevation of the foot of the patient's bed was often sufficient to reduce the pulse rate and increase the volume. When the pulse became faster and smaller I used to bandage the legs from the ankles to mid thigh. This too seemed to be helpful in some cases. At that time (1910-1912) little was known about blood volume and peripheral collapse but it seemed to me that the heart was not getting sufficient blood in venous return flow. Bandaging of the legs was purely empirical. It has since been shown (Wollheim) that one can increase the circulating blood volume 1,000 cc by this procedure. The postural treatment can obviously be used only when patients are comfortable, flat on their backs. In people ill with typhoid this treatment was satisfactorily used.

2. One would consider, immediately on being told that blood volume should be increased, that intravenous administration of isotonic fluids should be used. This appears to be good reasoning. What should one use and how much? One should bear in mind that the normal resting body loses from 2,500 to 3,000 cc in twenty-four hours. Sweating, vomiting, diarrhea and increased respiratory rate cause greater loss, so that from 1,000 to 2,000 cc daily is frequently not enough to make up water loss. We live in water and we should appreciate the deleterious effects of dehydration. As there is a

tendency to lessened chlorides in the blood, salt solution is useful. As patients who are so ill that they need intravenous treatment do not take much by mouth, 10 per cent solution of dextrose is useful. There is one flaw in this treatment. When the peripheral collapse is so severe that capillary permeability is increased, salt solution tends to pass out of the circulation and further to increase the tissue edema. Dextrose does not pass out so rapidly. In cases of severe collapse 50 cc of 50 per cent dextrose is more logical treatment than 250 cc of 10 per cent dextrose, the latter may pass out of more permeable capillaries and increase edema of the lungs. Acacia solution has been recommended. I have had no personal experience with it. I have been afraid to use it. Recently some work has been published which has shown that acacia often is harmful.

Some physicians like Ringer's solution better than physiologic solution of sodium chloride. If there is much vomiting and diarrhea, it would be a preferable solution to use.

Since it is wished to increase blood volume and to prevent transudation of fluid into the tissues, the most efficacious fluid to use is blood. Blood transfusion, in my opinion, has no value in introducing any curative substances to combat the infection. Its sole effect is to increase the effective circulating blood volume and thus give support to the heart. The proteins of the blood keep up the osmotic pressure within the capillaries so the fluid is not so easily lost to the tissues. Further, it dilutes the blood in circulation and reduces hemoconcentration. It prolongs the time for the body to make its own antitoxins or other immune substances. I can not see that it makes any difference whether one uses whole uncitrated blood or withdrawn citrated blood. If one can neutralize the toxins of any infection by the use of antitoxin, the capillary transudation ceases, fluid is again normally reabsorbed, blood volume is increased, venous return flow is increased, and the heart becomes slower and beats more forcefully. The infection is overcome, the patient is cured.

3. It has been my experience that as soon as a hospital intern is called to a febrile patient, especially following some operation, whose pulse is becoming rapid, he orders digitalis (usually digifolin) or caffeine with sodium benzoate. He is following his textbook or his teachers, one cannot blame him.

Digitalis has its very definite place in heart disease. No drug is so useful. But when there is no heart disease digitalis has no place in the doctor's armamentarium. Digitalis does stimulate the heart to increased contraction, it tends to keep the heart muscle from over dilating and it acts on the vagus endings under certain conditions. However, those effects are not useful to the patient whose peripheral circulation is in collapse. Further digitalis is potentially harmful because it decreases blood volume (Wollheim). Surely digitalis is not the drug to use in acute infections.

Caffeine with sodium benzoate is a favorite drug. Sollmann and Pilcher¹² have shown that caffeine is a vasodilator acting as an inhibitor of vasoconstriction. This does not appear to be a useful drug.

Metrazol and coramine are two new so-called heart stimulants. I am not convinced that either is of any real value, besides, we do not want heart stimulants.

What we most want is some drug that will (1) tend to increase blood volume, (2) stimulate oxidative processes, (3) increase phagocytosis and (4) decrease capillary permeability. Have we such a drug? Possibly

¹¹ Warfield, L. M. The Treatment of Circulatory Failure. *Ann Int Med* 7: 951 (Feb.) 1934.

¹² Sollmann, Torald and Pilcher, J. D. The Action of Caffeine on the Mammalian Circulation. *J Pharmacol & Exper Therap* 3: 19 1911.

we have not the ideal drug, but the drug which has all these actions is strychnine. I have used it for many years, used it in relatively large doses, from one-twentieth to one-fifteenth grain (0.003 to 0.004 Gm.) hypodermically every two to three hours. During the influenzal pneumonia epidemic of 1918 I felt that I saved lives with it. Professor von Jagic in his recent book says that he used it extensively in influenzal pneumonia and found it most efficacious. Others have used it in various infections. I can highly recommend it.

Two other drugs are useful in constricting capillaries. These are epinephrine and pitressin. The former acts through the sympathetic nerves on the muscle walls of the arterioles and its action is transient. It is most useful in sudden collapse. The latter acts on the muscle walls directly and has a more prolonged action. Hartl¹³ injected pitressin into men and studied its effect on the circulatory and respiratory systems. There was found an increase in the systolic and diastolic blood pressure, in peripheral resistance and in amplitude of the pulse with augmentation in the ventilation of the lungs. There was a lessened membrane permeability and an increase in the oxygen debt during work. It is said that the effect of a hypodermic injection lasts from two and a half to three hours. It is the better peripheral stimulant. It can be given in doses of from 0.5 to 1 cc. hypodermically every three hours.¹⁴

Whenever there is cyanosis, be it in pneumonia or any other serious bacterial infection, oxygen should be given in sufficient quantity to reduce the cyanosis. The nasal catheter method, now so generally employed, is as good as or better than the tent method. Oxygen properly administered not only reduces cyanosis and hence reduces anoxemia but slows the heart, lowers the temperature and probably by reducing anoxemia in the tissues, decreases capillary permeability, thus reducing transudation into the tissues.

SUMMARY

It is not the heart that fails in acute infections, the peripheral circulation collapses, so that the heart has no blood finally to pump. The condition is analogous to secondary shock.

The heart usually becomes smaller in acute infections until just before death, when it dilates because of anoxemia.

Digitals is not a useful drug in these cases of peripheral circulatory failure.

Measures to increase blood volume such as intravenous administration of sufficient quantities of physiologic solution of sodium chloride, dextrose or Ringer's solution or direct or indirect blood transfusions should be used. Drug therapy, up to the present time, is limited to strychnine, pitressin and epinephrine.

Whenever there is evidence of anoxemia (cyanosis of the nail beds and so on) oxygen should be given in sufficient quantities to overcome the cyanosis.

Patients with severe infections cannot all be saved but it is believed that more can be saved by using the procedures outlined than by the methods still described in textbooks.

425 East Wisconsin Avenue

INTESTINAL OBSTRUCTION DUE TO A HOLE IN THE MESENTERY OF THE ASCENDING COLON

PASSAGE OF DESCENDING COLON AND SIGMOID THROUGH DENSE RING IN MESENTERY OF ASCENDING COLON

THOMAS S. CULLEN, M.B.

BALTIMORE

In an article on acute intestinal obstruction due to mesenteric defects, requiring massive resection Edwards¹ says "The passage of a loop of small bowel through this abnormal opening in the mesentery is probably the rarest of all factors responsible for intestinal obstruction."

Edwards reports that "Brown² in 1920 summarized twenty cases of this malady, and Cutler³ in 1925 tabulated data concerning these cases and eight others." Edwards also refers to cases recorded by Elston,⁴ McWhorter,⁵ Judd⁶ and Hamaker⁷ and says "The opening is usually just mesial to the artery supplying the terminal part of the ileum, the appendix and the first portion of the cecum. This accounts for the fact that the terminal part of the ileum and the cecum are not included in the gangrenous process."

Edwards then reports two cases coming under his care. In each extensive resection was necessary. Both patients recovered. His article is well worth reading. His conclusions are as follows:

- 1 Abnormal openings in the mesentery are rare.
- 2 They are usually of congenital origin.
- 3 Injury has not been demonstrated as an etiologic factor in many instances.
- 4 The openings are most frequently located in the mesentery to the ileum within 2 or 3 inches of its junction with the cecum.
- 5 When intestinal obstruction results, massive resections are likely to be required.
- 6 Early diagnosis of intestinal obstruction and immediate operation will reduce the mortality.

On only one other occasion have I seen intestinal obstruction due to a hole in the mesentery. This was during my intern days at the Toronto General Hospital. The patient was an elderly man who was suffering from an acute obstruction. The waiting policy was the rule in those days. The patient lived for nearly a week.

At autopsy a hole was found in the mesentery of the small intestine and through this a loop of small bowel had passed. The incarcerated bowel showed little change and, even at autopsy, could be drawn back with ease.

According to Edwards, there were only two cases in which obstruction of the large bowel occurred, those of Judd and of Hamaker. In the present case there was a ringlike opening in the mesentery of the ascending colon. This ring was about 2 cm. in diameter and its walls were very firm. Redundant descending colon

1 Edwards C R. Acute Intestinal Obstruction Due to Mesenteric Defects Requiring Massive Resection. J A M A 99 278 (July 23) 1932.

2 Brown H P. Intra-peritoneal Hernia of the Ileum Through a Mesenteric Defect. Am J Surg 72 516 1920.
Cutler G D. Mesenteric Defects. Boston M & S J 102 305 (Feb. 12) 1925.

3 Elston Linn W. Intra-Abdominal Hernias with Report of a Case. J Indiana M A 19 15 (April) 1926.

4 McWhorter. Ends of Omentum Lined Through Opening in Mesentery. Clin North America 9 533 (June) 1928.

5 Judd J R. Mesenteric Defects. Surg Gynec & Obst 19 264 (Feb.) 1929.

6 Hamaker W D. A Unique Case of Bowel Obstruction. J A M A 62 204 (Jan. 17) 1914.

13 Hartl K. Action of Pitressin upon Circulation and Respiration. Arch f exper Path u Pharmacol 177 135 1935.

14 Charles M. Gruber and William B. Mount. (Some Observations on the Effect of Pitresin upon the Cardiovascular System.) J Pharmacol & Exper Ther 79 455 (Aug.) 1930. obtained vasoconstriction of coronary arteries in normal rabbits, frogs and dogs with pitresin in the perfusion fluid. A pitresin produced increase in volume of the dog's heart when it was injected intravenously. This does not mean that the heart of a patient who is ill with some acute infection will necessarily react in the same way as the heart of a normal dog. Pitresin has seemed to be a valuable drug in cases of peripheral collapse in infectious fever. The patients have recovered in spite of no because of its use.

and sigmoid passed over to the right, passed through the ring-shaped opening could not get back and became obstructed. Extreme tension of the mesentery of the distended bowel by pressure had produced blockage of the vessels of the lower portion of the ileum and had caused death of more than 5 feet of the distal portion of the small bowel, so that not only obstruction

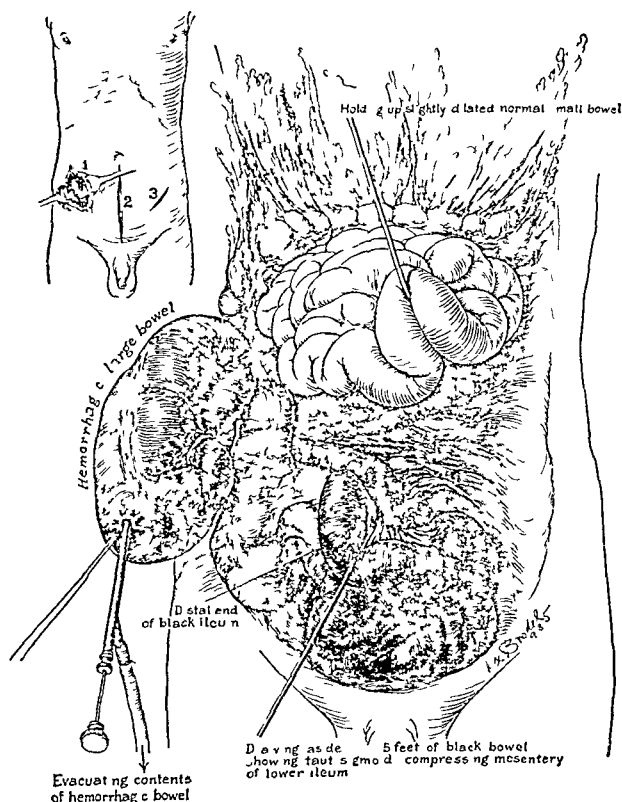


Fig 1—Intestinal obstruction due to a hole in the mesentery of the ascending colon. General view of the abdominal viscera as found at operation. The small picture at the upper left shows the three incisions made during the operation. Incision 1 was a gridiron incision made for removal of the appendix. Black bowel large size appeared whereupon the midline incision (2) was made. Incision 3 was made at the end of the operation and the sigmoid attached at that point to be opened later if necessary. The large picture is a semidiagrammatic representation of the abdominal condition as found at operation. The large hemorrhagic bowel proved to be a loop of descending colon and sigmoid flexure passing through a dense hernial ring in the mesentery of the ascending colon. This caused marked tension on the mesosigmoid resulting in constriction of the terminal mesentery of the small bowel sufficiently severe to cause stasis of its circulation and resulting in the destruction of more than 5 feet of small bowel to a point within a few centimeters of the ileocecal valve. This black bowel is shown filling the pelvis while the normal bowel light in color is drawn upward.

of the large bowel but also necrosis of much small bowel had to be dealt with.

I am indebted to my friend Max Broedel for his schematic illustrations and for the clear manner in which he shows the most likely cause of the rapid necrosis of so much small bowel.

REPORT OF CASE

History—Shortly after 8 on the morning of Feb 5 1935 Dr Harry Wilson of Baltimore asked me to see his son, who was 11 years old. The boy's general health had always been excellent and he never had had any serious illness. The only past symptoms that might be connected with the present illness were four or five attacks of abdominal pain of short duration which were always relieved by vomiting. These attacks had been scattered over a period of two or three years and were thought to be due to indiscretions in diet.

For several years he had complained of pains in the right side of the abdomen after running and of pains in his legs after any strenuous exercise.

Three months before, after playing football, he complained of rather severe pain in the lower part of his abdomen. This, however, lasted only five minutes.

Although he was accustomed to violent exercise in various forms, it was noted that after this attack he was less inclined to participate in any strenuous play. This, he said, was due to the fact that his legs hurt him and became tired afterward.

During the past three months he had appeared tired and on occasions, without apparent reason, had turned pale and even become "faint." However, he had usually looked well, had eaten and slept well, and had had normal bowel movements without laxatives.

One month before, after a long bicycle ride he became very faint and the next day had an acute attack of abdominal cramps which lasted about half an hour. These were relieved by vomiting.

On the day before I saw him he had taken no unusual exercise, had eaten moderately and had had a normal bowel movement before retiring at 9 p. m.

At 1 a. m. he was heard to be "sleeping heavily and snoring in an unaccustomed manner." He awoke about 2:30 a. m. with moderate pains in the abdomen. These gradually became worse, but he did not report to his parents until 6:30 a. m. Dr Wilson said that at this time the pains were rather acute, paroxysmal in character and generalized. The temperature was 99 F, the pulse 90. There was no localized tenderness and no muscular rigidity. Some nausea was present and the boy made several attempts to vomit. Enemas were ineffectual except in bringing away a slight amount of mucus.

I saw the boy with Dr Wilson at 8:30 and we both agreed that he should be sent to the hospital at once.

Operation and Result—The operation was performed at the Church Home and Infirmary at 9 o'clock. Since the symptoms suggested an acute appendicitis, a gridiron incision was made and bluish black bowel was at once encountered. Immediately a midline incision was made and a hole about 2 cm. in diameter

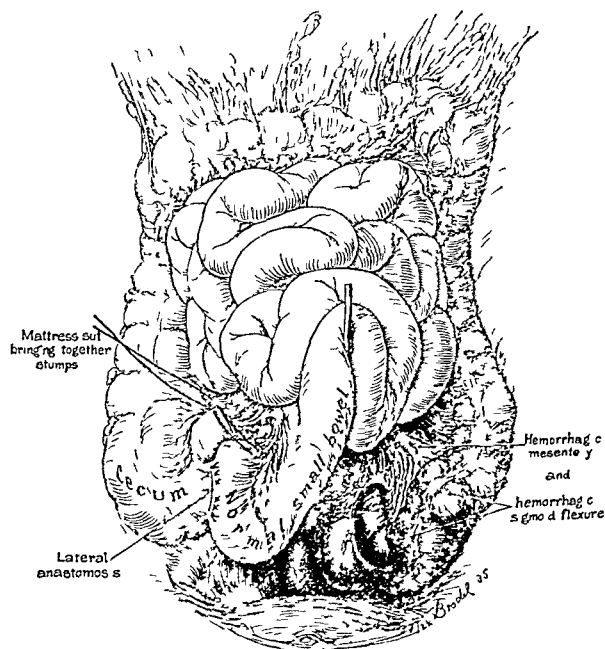


Fig 2—General view of the abdominal viscera after operation. The evacuated hemorrhagic loop of sigmoid was temporarily laid aside in order to determine to what extent it would recover. The gangrenous small bowel was then removed, the ends were closed, the appendix was removed as it was in the way and a lateral anastomosis was made between the small bowel and the cecum. The two stumps of small bowel were covered over by approximation suture as indicated. By this time the hemorrhagic sigmoid with its mesentery had apparently recovered to such an extent that it was considered wiser to leave it alone. It was however stitched to the peritoneum of the gridiron incision on the left (incision 3 in Fig 1) to be opened later if necessary.

was found in the mesentery of the ascending colon. Through this a loop of large bowel had passed and had become markedly distended (Fig 1). The mass was bluish black and could not be drawn back because of the accumulation of fluid. Accordingly

a purse-string suture was placed at the most distended part of this loop and a small trocar was then introduced. The contents were rapidly emptied, they consisted in large measure of blood. The purse-string was immediately tied and then reinforced with three or four mattress sutures. Not one drop of the bowel contents escaped.

The loop of formerly distended bowel was now readily drawn back through the opening in the mesentery and was then pushed over to the left, because there was evidence of further trouble in the abdomen.

A large amount of the small bowel was black, but the peritoneal covering was still smooth and glistening. This black portion was followed upward until normal bowel was reached again. At this point there had been some constriction. We then clamped doubly, cut across the bowel with a cautery and removed the small bowel until a normal portion was again reached at a point within a few centimeters from the cecum. The removal of the bowel suggested very strongly the way in which the bowel is removed at autopsy. It had to be done very rapidly.

A physician who was watching the operation, wishing to determine just how much bowel had been removed, lifted it up, and even in its convoluted form it was over five feet in length.

Both ends were closed and the appendix was then removed, as it was in the way. A lateral anastomosis was made between the small bowel and the cecum (Fig 2), the opening being rather smaller than usual, so that the contents of the small bowel would not pass too rapidly into the cecum.

An examination was then made of the redundant descending colon, which had been herniated through the mesentery. Its color was infinitely better, and although the mesentery of this area showed a good deal of hemorrhage, it seemed wiser to let well enough alone (fig 3). This part of the bowel, however, was brought up to a left gridiron incision and tacked to the peritoneum so that it could be opened promptly if necessary, and so that the sigmoid was fixed in such a way that it could not possibly get loose and again pass through the ring in the mesentery of the ascending colon. The margins of the ring were so hard and so rigid that the ring could not be closed.

One cigaret drain was left in the lower portion of the midline incision. The gridiron incision on the right and the gridiron incision on the left were closed.

At the beginning of the operation the outlook seemed hopeless but the patient stood the operation fairly well. At the end of the operation his pulse was fair although rather rapid. It was 136.

Postoperative Progress—As the outlook in this case necessarily was not good, the postoperative course is recorded somewhat in detail.

February 5 the patient was given 700 cc of 10 per cent solution of dextrose intravenously in the operating room. He was returned to his room and given 400 cc of citrated blood intravenously. Intramuscular infusion of physiologic solution of sodium chloride was started and 350 cc was absorbed. The patient came out of the anesthesia in good condition. His pulse varied from 124 to 146 but was strong and of good quality. His temperature during the day varied from 102.6 to 103.6 by rectum. Codeine was used as a sedative.

February 6 the patient had a fairly comfortable night. As he was beginning to have some abdominal distention the rectal tube was passed at intervals and bloody mucoid material obtained. This procedure gave relief. Ward inhalations were started because of the cough which the patient had had before operation and which had become worse. The temperature during these twenty-four hours varied from 101.6 to 105 by rectum. The pulse varied from 124 to 148 but was of good quality. Seven hundred cc of 10 per cent solution of dextrose and physiologic solution of sodium chloride was given intravenously in the morning and repeated later on in the day.

February 7 the patient had been more comfortable except for mucus in the throat from pharyngitis and bronchitis. Severe upper abdominal distention was relieved by the passage of the intranasal stomach tube twice during the day, each time a large amount of gas and dark green fluid was aspirated. The patient refused to allow the tube to remain in place all the time but had no objection whatever to its introduction as often as was necessary. The rectal tube was passed several times and a bloody mucoid material was obtained. A small amount of flatus was expelled through the rectal tube on one occasion.

The pulse was between 108 and 124, and the temperature between 99.2 and 100.6 by mouth. The general condition was greatly improved except for the recurrent distention of the stomach and the mucus in the throat. Seven hundred cc of 10 per cent solution of dextrose and physiologic solution of sodium chloride was given intravenously at 3 a m, 9 a m, 5 p m and midnight.

February 8 the patient was expelling large quantities of gas by rectum. There was no bloody discharge from the rectum. The abdominal distention was relieved by the passage of the stomach tube on two occasions. The patient was given small amounts of liquid by mouth. The pulse varied from 118 to 94, the temperature from 99.8 to 100.6 by mouth. Seven hundred cc of 10 per cent solution of dextrose and physiologic solution of sodium chloride was given intravenously at 2:30 and at 10:30 p m.

February 9 the patient had had a very comfortable night. He expelled gas freely and had a normal, formed stool. He was given liquid diet in small amounts and also a small piece of beefsteak. His pulse was 92, the temperature ranged between

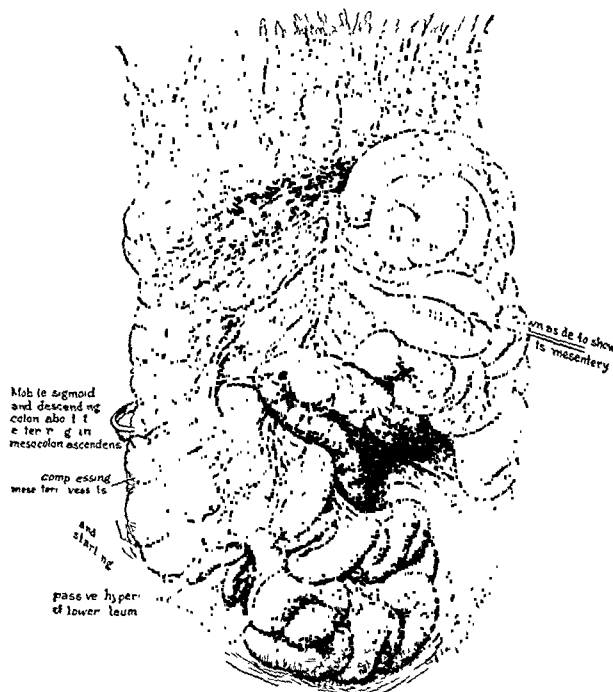


Fig 3—Diagrammatic representation of the probable cause of the speedy destruction of more than 5 feet of small bowel. It seems obvious that the chief factor was the ring shaped opening in the mesentery of the ascending colon (shown by arrow) where the fusion of the embryonic large bowel and its mesentery with the parietal peritoneum had remained incomplete. Any ring of such a character in the abdominal cavity is a potential source of danger threatening intestinal obstruction. Another factor was the marked mobility, redundancy and laxness of the descending colon and sigmoid. Under ordinary circumstances this bowel could never have reached the ring. It is a wonder that the small intestine was not caught on some occasion but the ring was probably large enough to permit a normal, small intestinal loop to slide in and out without getting caught. Glance at the vessels in the mesentery of the small bowel as they pass beneath the loop of large bowel which is to follow the arrow out through the ring beneath the ascending colon to become constricted and distended as indicated in figure 1. The more it was distended the more taut became its mesentery. This taut mesentery caught the mesenteric vessels of the terminal ileum as in a vise affecting the venous circulation more than the arterial, thus causing passive hyperemia and then death of the small bowel. This vise consisted of the taut mesentery of the sigmoid on the one side and the resisting lumbar vertebrae and the sacral promontory on the other.

99.4 and 100.6. Seven hundred cc of 10 per cent solution of dextrose and physiologic solution of sodium chloride was given intravenously at 11 a m and 7 p m.

February 10 the patient was much improved and was taking liquid diet well. To this lactose was added, he also had buttered toast and milk shakes. He was passing gas and fecal matter by rectum. The dressing was changed and the drain shortened. The pulse range was from 88 to 96. The temperature was from 99 to 100.4 by mouth. At 5 p m 800 cc of 10 per cent solution of dextrose and physiologic solution of sodium chloride was given intravenously.

February 13 the patient's condition was still improving, all black stitches were removed

February 17 the patient had a formed stool, the silkworm-gut stitches were removed. A wet dressing was put on the incisions, as there was a small amount of purulent discharge

February 22 the patient was up and walked

February 26 the patient was discharged in excellent condition. His incisions had healed completely

Nov. 10 1935, Dr. Wilson told me that his son had been in good health ever since leaving the hospital. It is with much difficulty that he curbs the boy's desire to take part in strenuous athletics. Now and then the boy will look a little pale for a moment or have a slight feeling of faintness. He has always been fond of fruit but now he craves it. He will eat six apples at a time and if a can of pineapple is within reach, he will finish it at one sitting. He is now (says Dr. Wilson) making unusual progress at school. The patient's bowels are regular and the stools normal, but following the formed stool there is very occasionally a little diarrhea, which Dr. Wilson thinks can be accounted for by the excessive amount of fruit the boy eats.

As I look back on this case it becomes more and more evident that Dr. Wilson's prompt action saved his only son's life. Delay of a few hours would have told a different story.

25 East Eager Street

PERIARTERITIS NODOSA

WITH REPORT OF CASE SHOWING UNUSUAL
FEATURES AND APPARENT RECOVERY

LYLE MOTLEY, MD

MEMPHIS, TENN

Kussmaul and Maier¹ in 1866 first accurately described a definite inflammatory disease of the medium and small arteries. Since then this relatively rare disease has been reported at intervals until a fairly voluminous literature has accumulated on the subject, containing reports of extremely varied clinical manifestations. Ophuls,² in an article on the subject in connection with the report of a case in 1923, found seventy cases recorded to that time, and Rothstein and Welt³ found 195 cases recorded to 1933. I have been able to find an additional twenty cases in the literature.⁴ While a critical review of some of the cases reported might leave some doubt as to their being true periarteritis nodosa, since other vascular lesions can be confused with those of this disease,⁵ nearly all the cases

reported so closely conform in their pathologic characteristics that there is little doubt that the disease exists as a pathologic entity.

PATHOLOGY

The changes consist of an inflammatory process involving, in different stages and in different degrees, all the coats of the medium and small arteries with perivascular inflammatory changes. In all the cases there is a marked infiltration of the vessel walls with polymorphonuclear neutrophils and to a lesser extent with lymphocytes. Extensive vascular and perivascular infiltration with eosinophils has been reported at times, as in Ophuls'² case and my first case. There is exudation and later necrosis resulting in aneurysm and thrombosis, and frequently the small aneurysms rupture, causing either frank hemorrhage or hemorrhagic extravasation. When the process extends to the intima the smaller vessels become occluded. Marked involvement of the veins has been noted, though only rarely.⁶ Multiple aneurysms apparently are very pronounced in some cases and almost absent in others.⁷ The interference of blood supply by vascular occlusion causes secondary pathologic changes in various organs and tissues, characterized by necrosis, infarction, fatty degeneration and the like, the character and extent of which determine the symptoms referable to these organs.⁸ Almost any secondary tissue changes can occur, such as the unusual and marked involvement of mucous and serous membranes reported in one case.² Bony tissue apparently is almost free from involvement, though this has been reported at least once.⁹ However, some systems are decidedly more frequently involved than others, and the kidney seems to be the organ most often involved, appearing as high as 80 per cent in one series studied.¹⁰ An exhaustive discussion of the different types of pathologic changes appear in Arkin's article.

ETIOLOGY

To the present time the etiology is unknown though generally considered of infectious nature.¹¹ Of the various organisms considered, the streptococcus has been implicated more frequently than any other, though the possibility of the disease being of syphilitic nature has been seriously considered by several writers. The failure of the disease to respond in any definite degree to antisyphilitic treatment and the inability in any instance to demonstrate the spirochete within reason eliminate syphilis as a cause. Much experimental work has been done. Vasiliu and Iriminoui¹² isolated a nonhemolytic streptococcus from involved tissues but were unable to reproduce the disease in animals. Harris and Friedrichs¹³ in a series of animal experiments concluded from positive results that the cause

From the Department of Medicine University of Tennessee College of Medicine

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is a filtrable virus Von Haun,¹⁴ by inoculation of material from human cases produced the arterial changes of the disease in animal experiments, but no organisms could be recovered from the diseased animals. Carling and Hicks¹⁵ repeated Von Haun's experiment with negative results. By inoculations of material from five cases Franz¹⁶ failed to transmit the disease to animals and believed it not a specific disease but secondary to many different infections. By blood and tissue cultures various organisms have been recovered by different workers from patients with the disease, particularly *Bacillus coli* and streptococci.¹⁷ By many writers the association of periarteritis with other diseases is mentioned among which is scarlet fever, Friedberg and Gross¹⁸ having found it following scarlet fever in two of eight cases. Many writers call attention to the apparent relationship of periarteritis to rheumatic fever, and some believe that rheumatic infection is a common cause of the vascular lesions.¹⁹ Some cases have apparently definitely followed an attack of acute tonsillitis.²⁰ In one series that came to autopsy Aschoff bodies were present in the myocardium in six of thirteen cases.¹⁹ However, very few of the cases reported previous to 1934 showed definite evidences of typical rheumatic changes, and a few of these appear questionable.

An arterial disease resembling periarteritis nodosa has been found in lower animals, even in wild deer,²¹ further suggesting that it is a specific disease. To the present time the causative agent has not been determined either as a bacterium or as a filtrable virus, but the nature of the lesion suggests an infectious etiology.²²

There is no age incidence, the youngest patient being 3 months and the oldest 78 years of age. Fifty per cent of the cases occur between 20 and 40 years of age.¹⁰

SYMPTOMATOLOGY AND DIAGNOSIS

The symptoms are extremely varied, as would be expected, since the arterial system of any organ or set of organs may be involved, and even different organs in turn as the process subsides in one and becomes manifest in another, as occurred in case 1. The most outstanding clinical manifestations are those referable to the kidney. Heart failure with symptoms similar to the common clinical picture of coronary disease may appear as an isolated clinical manifestation.²³ On the picture may be one of peripheral neuritis, even including the cranial nerves.⁴ Involvement of the central nervous system occurs in only about 8 per cent of cases.¹⁰ This small percentage is remarkable, and when the central nervous system is involved it is prac-

tically always the brain.²⁵ Ophuls² was able to find only four cases of cerebral involvement in the seventy cases that he reviewed in 1923. Since then other cases of cerebral involvement have been recorded.²⁶ Skin lesions not infrequently occur, taking the form of subcutaneous hemorrhages, urticaria and in particular purpura resembling Schönlein's disease. At least one case of erythema nodosum has been reported as due to vascular changes in the skin.¹⁴ Gastro-intestinal symptoms with bloody diarrhea are frequent, and peritonitis may develop²⁷ from necrosis and perforation of the intestinal wall. Almost any symptom or set of symptoms may occur and may vary from time to time, causing a most confusing clinical picture. The general symptoms are fever, never very high, sweating, rapid pulse and muscular and abdominal pains even when there is no outstanding mesenteric involvement.

The particular character of the local symptoms depends on the system of arteries that happens to be involved. The frequent involvement of the kidney most often leads to a diagnosis of a primary medical or surgical renal lesion.²⁸ The most frequent diagnosis in the cases of outstanding renal involvement reviewed has been 'hemorrhagic nephritis' or an analogous designation.²⁹ Numerous deaths from renal hemorrhage have been reported.³⁰ Even unilateral involvement of the kidney with hemorrhage has occurred.³¹ Other such sharp localization of symptoms as those referable to the gallbladder leading to the removal of that organ³² has been reported. Occult hemorrhage and death may occur, as in the rupture of an aneurysm of the hepatic or cystic arteries.³³

The diagnosis has seldom been made during life, and then it has been more or less accidental.³⁴ This is not remarkable, considering the protean character of the manifestations and their ability to simulate almost any ordinary clinical entity.³⁵ The symptomatology is frequently vague, and there are no clinical diagnostic symptoms per se. The great difficulty in diagnosis is due to the variability of the clinical picture. Meyer³⁶ mentioned the combination of chlorosis, polyneuritis and gastro-intestinal symptoms as being a diagnostic

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triad, to which combination was added nephritis by Brinkmann,³⁷ who suggested the diagnostic syndrome of polyneuritis polyserositis or a combination of the two, gastro-intestinal symptoms and nephritis. This syndrome is diagnostic if there is involvement of several systems of arteries simultaneously but when there is



Fig 1—Temporary mount of frozen section of artery showing typical changes. Permanent mounts of paraffin sections failed to include as typical a lesion and this preparation had deteriorated and faded greatly when photographed later, losing the distinctive appearance of the intense cellular infiltration and extensive perivascular changes.

localization of the process to one or two organs there is nothing in the symptoms referable to a disturbance of the organ or organs that in any way suggests the specific nature of the pathologic condition. In the end, the diagnosis depends on the typical pathologic changes found in the arteries either at biopsy or post mortem.

There are no clinical laboratory aids. Moderate or severe leukocytosis is present though not universally. Marked eosinophilia has occurred only a few times.³⁸ Ophuls² remarked on the absence of a marked eosinophilia in the circulating peripheral blood in the face of a decided eosinophilic infiltration in the lesions in his case.

PROGNOSIS AND TREATMENT

In the recognized cases, recovery has been rare. An occasional recovery has apparently occurred¹⁰ as in case 1. Since there is some tendency to remission and even apparent recovery in the severe and recognized

cases, it is possible that many mild cases exist and go on to spontaneous recovery unrecognized.

Except for general physiologic measures and antisyphilitic treatment and repeated blood transfusions, no other form of treatment has been used frequently, and the efficacy of these measures is questionable. Several of the patients who have apparently recovered have been given antisyphilitic treatment.

REPORT OF CASES

CASE 1—History—A white man aged 31, consulted Dr. John P. Henry in January 1934 for asthma of about five months duration. Because of other clinical features in the case, Dr. Henry referred him to me for diagnostic study. Except for the asthma, the patient noticed nothing unusual until about seven weeks previously, at which time a febrile illness developed. He had some fever for four or five days and thought it was a common cold. Early in this rather mild illness blood counts, made by his attending physician in another city, showed an essentially normal red cell count and hemoglobin but a leukocytosis of 16,400 with polymorphonuclear leukocytes 82 per cent, lymphocytes 11 per cent, large mononuclears 5 per cent and eosinophils 2 per cent. Five days later, after the patient became ambulatory, blood counts made in the office of Dr. G. Y. Gillespie in Greenwood, Miss., showed red blood cells 4,000,000, hemoglobin 75 per cent, leukocytes 17,600, polymorphonuclears 22 per cent, lymphocytes 13 per cent and eosinophils 65 per cent. A few days after this illness a pain developed in the neck and in about seventy-two hours all the muscles became painful and the patient began to have fever again. Shortly afterward localized pain appeared in the left ankle which was soon followed by swelling and the appearance of purplish red spots in the skin over the ankles. Within a day or two the right ankle underwent a similar change and



Fig 2—A small artery in subcutaneous tissue. The perivascular cellular changes are moderate in extent but distinctive.

this persisted to the time he came under my observation. At that time there were generalized weakness, soreness and pain in all skeletal muscles and much pain, stiffness and swelling in both ankles and feet.

Examination—The nose showed thickening and congestion of the mucous membrane and there was considerable obstruction by reason of mucous membrane changes. Examination of the teeth, mouth and throat generally was negative. The heart

³⁷ Brinkmann. Zur Klinik der Periarteritis nodoa. München med. Wchnschr. **69**, 703 (May 12) 1922.

³⁸ Lewis C. Report of Case of Periarteritis Nodosa. Proc. Path. Soc. Philadelphia **14**, 134, 1911. Pickert-Menke H. Ueber einen Fall von Periarteritis nodoa. Frankfurt Ztschr. f. Path. **23**, 313, 1920.

and lungs were normal. The abdomen was entirely normal. Examination of the neuromuscular system and the eyegrounds was negative. Both ankles were edematous and the skin overlying them to a point about half-way up the leg showed rather thickly scattered erythematous purpuric-like lesions. On the outer aspect of the left ankle was a deeper ecchymotic area that appeared like an inflammatory process in the subcutaneous

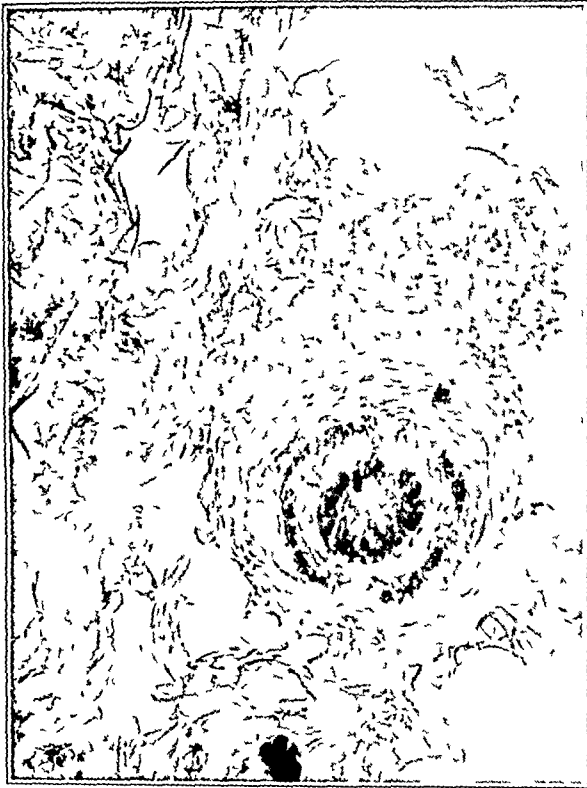


Fig 3—Active lesion of vessel in subcutaneous tissue. Frozen section. An active lesion did not appear in portion of tissue from which permanent sections were made.

tissue. One or two nodules were felt beneath the skin on the outer aspect of the left leg above the ankle which were small and painful. The skin overlying these nodules showed slight redness. The muscles were tender throughout and motion was slow and painful. There were a few small shotty subcutaneous nodules over the upper extremities similar to those in the legs. The skin over which showed no reaction. There was generalized lymphatic enlargement, the nodes being painless with no skin reaction over them. The temperature was 98 F, the pulse 108 and the blood pressure 95 systolic 80 diastolic.

At first observation red blood cells numbered 3,710,000 with hemoglobin 11.3 Gm per hundred cubic centimeters of blood. White blood cells numbered 32,000 with polymorphonuclear leukocytes 28 per cent, eosinophils 67 per cent and lymphocytes 5 per cent. The blood Wassermann reaction was negative. The urine showed a heavy trace of albumin, a few hyaline casts, pus cells and red cells. Five specimens of feces were negative for parasites and ova. Three blood cultures on successive days were negative at the end of two weeks. The blood sugar was 133 mg per hundred cubic centimeters (not fasting). Total nonprotein nitrogen was 40 mg per hundred cubic centimeters. Uric acid was 4 mg. Subsequent observations showed an average of 25,000 leukocytes and an average of 66 per cent eosinophils. An electrocardiographic tracing showed evidences of myocardial changes suggesting coronary disease.

A piece of skin and subcutaneous tissue from the left leg was removed by Prof. J. L. McGehee for microscopic study. Sections of a small artery contained in the tissue showed intense inflammatory cellular infiltration of the adventitia extending through the media and involving the intima with obliteration of the lumen. The cellular infiltration extended well beyond the artery out into the perivascular tissue producing a definite

nodule. These cells consisted for the most part of polymorphonuclear leukocytes with many eosinophils and some round cells. The histologic picture presented by the artery was typical of periarteritis nodosa.

Clinical Course—The treatment consisted of general physiologic measures with repeated blood transfusions of an average of about 350 cc each, small doses of nearsphenamine, a high vitamin diet and general symptomatic measures. While the patient was under observation there appeared evidences of derangement of almost every system that is capable of producing clinical manifestations. At different times there were such manifestations as mild delirium, marked evidence of nephritis with blood nitrogen going as high as 100 mg per hundred cubic centimeters, symptoms of coronary disease, hemorrhagic retinitis, severe abdominal pain with bloody diarrhea, peripheral neuritis in the arms and legs, and cough with blood-streaked sputum. Some of these various manifestations coexisted and some appeared as others were disappearing. The patient began to improve and was discharged to his home and the care of his family physician, very much improved clinically. About the only pronounced symptoms at the time of discharge were a flaccid paralysis of the right leg and right arm and to a lesser extent of the left arm and marked general weakness.

The patient returned for observation about ten months later, Oct. 19, 1934, having gained about 40 pounds (18 Kg) and free from all symptoms except those of neurologic residuals as a result of acute peripheral neurologic involvement at the time of the acute illness. Examination was entirely negative except for atrophy of the intrinsic muscles of the hand and the right forearm and atrophy of the muscles of the right leg with toe drop. There were no sensory changes. The temperature was 98 F, the pulse 82 and the blood pressure 98 systolic 70 diastolic. The red blood cells numbered 5,200,000, with hemoglobin 15.7 Gm per hundred cubic centimeters. The leukocytes numbered 6,800, polymorphonuclear neutrophils 57 per cent and lymphocytes 43 per cent. Examination of the urine was negative. The sedimentation rate was normal. An electrocardiographic tracing was negative. The patient considered himself symptomatically well except for the neurologic changes.



Fig 4—Healed lesion of vessel in subcutaneous tissue. This vessel present in same block of tissue in which active lesion was found but in a different portion.

referred to and was attending to his work regularly. He has not been seen since that time but reports indicate that he is still well.

The important features of this case are (1) generalized involvement of somewhat migratory character, (2) marked eosinophilia of peripheral blood, (3) diagnosis during life, and (4) apparent recovery.

CASE 2—A white man, aged 35 noticed swelling of the left foot and leg to a point a little below the knee three months before he came under observation, together with the appearance of red nodules in the skin. Two similar nodules had been present on the dorsum of the right foot but had disappeared at the time he came under observation. The nodules were only slightly tender and the only subjective symptom was slight discomfort in the left foot. Physical examination was entirely negative except for the red subcutaneous nodules and slight pitting edema of the left foot and leg. Pulsation of arteries was present and apparently normal, and there were no trophic or color changes. Complete laboratory studies were negative in all respects except for a persistent leukocytosis averaging about 12 000 with an average of 75 per cent polymorphonuclear neutrophils and a trace of albumin in the urine. Tissue removed from the calf of the left leg showed a typical lesion of periarteritis of a small artery in a frozen section. A permanent section from the same block of tissue failed to show any active lesion but did show a healed lesion in a somewhat larger artery. In addition to antisyphilitic treatment roentgen therapy is being given by Dr W R Bethea of the Baptist Hospital and to date he has received 1746 roentgens over the feet and legs divided into three sances. At the time of this report he has been under observation about seven weeks and apparently is slowly recovering. No new lesions have appeared and the ones that were present have disappeared either completely or nearly so. No additional symptoms or changes in the result of laboratory examinations have appeared.

899 Madison Avenue

ELECTRICAL ALTERNANS

A CLINICAL STUDY WITH A REPORT OF TWO
NECROPSIES

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It is generally recognized that electrocardiography adds little to the clinical diagnosis of pulsus alternans. While the electrocardiogram may show evidence of slight or widespread coronary and myocardial involvement paradoxically it rarely demonstrates alternation of the ventricular complexes as one, a priori, might expect.

The two cases of electrical alternans without pulsus alternans we are about to describe—the first to be reported in this country—are in sharp contrast to the usual type of alternans, which is confined to the pulse heart sounds or apex beat, without evidence of electrocardiographic alternation. The electrocardiographic finding of electrical alternans, judging from the literature and our own experience, is an exceedingly rare phenomenon. Our first case, observed in March 1933 constitutes the only one we have seen in a series of approximately 10 000 electrocardiograms covering a period of about thirteen years. However, since the appearance of the first case, three additional cases of electrical alternans in one or more leads of the electrocardiogram have come to our attention. One constitutes the second case of this report a second occurred during an attack of paroxysmal tachycardia and a third was associated with electrocardiographic evidence of bundle branch block. In none of the latter three cases were

simultaneous venous or arterial pulse tracings made to rule out pulsus alternans, so that it is remotely possible that one or more of them are, in reality, examples of pulsus alternans with alternation of certain electrocardiographic complexes. Such a combination is rare but not as unusual as isolated electrical alternans without apparent mechanical alternation. The appearance of these three additional cases shortly after the finding of our original case suggests that such cases may be easily overlooked unless attention is particularly directed to them. One must be, as it were, 'alternans conscious'.

REPORT OF CASES

CASE 1—Dr S a retired woman physician, aged 48, referred through the kindness of Dr Robert Sonnenschein, seen in March 1933 complained of mild pain in the left side of the chest radiating on occasion to the left shoulder and spine first noticed some six years before and recurring during the past four months. It appeared frequently while the patient was eating and doing her daily housework. She also complained of vertigo palpitation depression with occasional crying spells easy fatigability and moderate dyspnea. She had two nervous breakdowns which coincided with the two periods of precordial pains. Her family, past and personal histories other wise were essentially negative.

The patient was moderately obese. The pulse rate was 120 and the blood pressure 196 systolic, 100 diastolic. The left heart border was displaced outward slightly, her heart tones were 'tic-tac' in quality and she had a markedly accentuated aortic second sound and a faint systolic blow over this region. A coarse tremor of the fingers was present. The metabolic rate was +137 per cent. An electrocardiogram at this time showed besides a left axis deviation, a frank and continuous electrical alternans in leads 3 and 4. The alternans was a discordant one of the QRS and T waves.

The impression at this time was obesity, hypertension arterio sclerotic coronary heart disease moderate cardiac hypertrophy early mild congestive heart failure with anginal attacks sinus tachycardia anxiety neurosis and electrical alternans the last term being used for the first time in our cardiac diagnostic nomenclature. She was advised to secure more physical and mental rest and was placed on a preparation combining theobromine and phenobarbital.

She returned again about four weeks later feeling and appearing distinctly improved. The pulse rate was 100 and the blood pressure 166 systolic 90 diastolic. A second electrocardiogram (fig 1) was taken at this time and substantiated the earlier finding of discordant electrical alternans. In this record the alternation is present in all three leads and is a discordant one of QRS and T.

She was asked because of the unusual electrocardiogram to report to the heart station for further study. A week later the electrocardiogram was recorded simultaneously with optically recorded pulses from the subclavian artery radial artery and external jugular vein as well as with optically recorded apex beats and apical heart sounds (Wiggers method¹). No alternation of the pulse, apex beat or heart sounds was found while the electrical alternans was present proving this to be an instance of isolated electrical alternans.

The inconstancy of the alternation suggested to us the possibility that breathing might be related to the alternation as has been found to be the case in other instances.² Simultaneous records of the electrocardiogram optically recorded pulse and respiration were therefore made. As shown in figure 2 some but not all of the inspirations started transient electrical alternation of from one to three cycles. When the breath was held no alternation appeared. In several instances in these curves the alternation was accompanied by alternation in cycle length. No alternation of the pulse was found.

The patient disappeared from view until July 1934 a period of fourteen months. The electrocardiogram when she returned

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N J May 7 1935

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of the Heart and Circulation

From the Medical Department Heart Station and Pathology Department
Michael Reese Hospital

¹ Wiggers C J The Pressure Pulses in the Cardiovascular System
New York Longmans Green & Co. 1928 p 15

² Kisch Bruno Der Herzalternans Leipzig Theodor Steinkopff
1932

for examination to our amazement showed complete absence of the alternans (fig 3 A). Her report and our examination showed her to be in a satisfactory state.

Five months later she entered the hospital because of failing strength and exacerbation of old symptoms following a 'cold' six weeks prior to entrance. Two weeks afterward an acute viselike pain suddenly developed over the precordium radiating to the left shoulder and elbow which had recurred repeatedly since. There had been increasing general nervousness and some emotional instability. Sedatives and glyceryl trimurate gave her a good deal of temporary relief. On the day of admission she had had seven attacks of precordial pain by late afternoon.

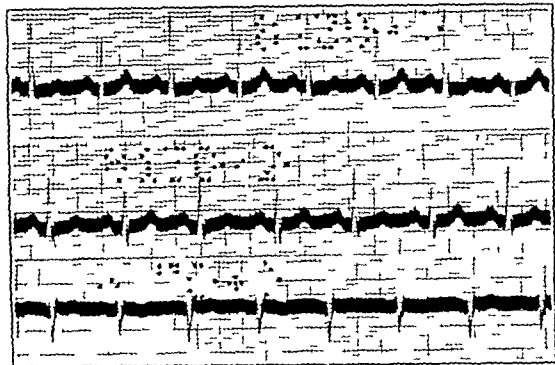


Fig 1 (case 1)—Electrical alternation in all three standard leads involving R, T, and S. S₁ discordant alternation between R, T, and S. Record taken April 25, 1933.

Examination at this time revealed a rapid, regularly beating heart, with a rate of 120. The left border was outside the nipple line. The aortic second and the pulmonic second sounds were accentuated. There was gallop rhythm at the apex. The lungs were clear. There was slight edema along the tibial crests. The temperature was normal. Successive arterial blood pressure readings were 142/98, 124/80 and 102/70. A 2 meter roentgenogram revealed a moderate cardiac enlargement. The basal metabolism a week later, was +29.4 per cent. The urine showed no abnormalities, she had a moderate secondary anemia. During her stay in the hospital moisture developed at both lung bases posteriorly. Liver dulness increased and the pulse became more rapid. It was apparent a week after entrance that she was critically ill. She was placed on sedatives including morphine and a mixture of opium and alkaloids.

Several electrocardiograms were obtained at this time with difficulty and showed absence of the electrical alternans last observed nineteen months previously. The absence of electrical alternans is seen in the records in figure 3 B and C.

The marked change in the ST segment depression in leads 1 and 2 and elevation in lead 3 is evident in record C which is typical of other records taken during this time and bespeaks progressive coronary insufficiency. The increase in the size of the T wave and the appearance of an upright T₁ probably have the same significance. During an anginal attack (fig 3 B) the electrocardiogram showed that ST₁ and ST₂ became smaller in all leads and auricular extrasystoles appeared. A tablet of 1/400 gram (0.0006 Gm) of glyceryl trimurate relieved the attack and restored the electrocardiogram to its preceding state (fig 3 C). No increased irritability of the carotid sinus reflex could be demonstrated clinically or electrocardiographically.

December 15 she became rapidly worse and before oxygen could be administered and in spite of the use of caffeine ampulphor and the like she died.

The necropsy revealed a moderate generalized arteriosclerosis with coronary arteriosclerosis. There was a recent bilateral bronchopneumonia. The lungs, liver, spleen and kidneys showed chronic passive hyperemia of long duration. The outstanding changes of the heart at autopsy were the small multiple recent and organizing infarcts and areas of fibrosis. The coronary

arteries themselves showed only a moderate amount of arteriosclerotic change. There was an atypical distribution of the coronary arteries the right taking care of the nutrition of the largest part of the heart (fig 4). There was an arteriosclerosis of the ascending aorta arteriosclerotic plaques which were present just above the mouth of the right coronary artery caused a marked narrowing of its orifice. The left coronary artery was much less in extent than normal and was patent. It is likely that the changes at the mouth of the right coronary artery, which supplied most of the heart muscle fibers were responsible for the myocardial fibrosis. Because of the myocardial fibrosis, the heart probably became insufficient on various occasions. This insufficiency combined with the consequent temporary lowering of the arterial blood pressure on the one hand and the narrowing of the mouth of the right artery on the other, apparently was the principal factor in the causation of the multiple infarcts of the heart. Electrical alternans is not mentioned in the previous reports of multiple small or microscopic infarcts of the heart by Kirch³ and Buchner.⁴

CASE 2—Mrs L, aged 59 a patient of Dr Solomon Strouse's when first seen April 3, 1934 had no complaints referable to the heart but complained of loss of appetite. On physical examination, the left heart border was found displaced outward. The urine contained albumin and hyaline and granular casts. There was slight edema of the legs. She was sent to the hospital, where definite signs of effusion of the right pleural cavity and considerable enlargement of the heart were found and verified by roentgen examination. The x-ray report indicated pericardial effusion but the clinical signs were not conclusive. The temperature was 99.2 F pulse 108 respiration rate 28 blood pressure 120 systolic 74 diastolic. The red blood count was 4,180,000, white count 12,150. There were rales and dullness over the right lung base. She became dyspneic and orthopneic. An electrocardiogram taken April 6, the day of admission showed an alternans of the QRS complex in leads 1, 3 and 4 without any alternans of the other waves (fig 5 4). Because of the patient's condition no opportunity was available for taking other types of records to rule out mechanical alternans. Thoracentesis yielded a bloody fluid in which tumor cells were found later. The roentgenograms taken after the chest had been tapped showed a consolidated area in the right lung in the lower portion of the middle third that was suggestive but not particularly typical of a malignant growth. The course in the hospital was steadily downhill and the patient died eight days after admission.

The clinical impression was that there was generalized arteriosclerosis with myocardial fibrosis, pleural effusion, and

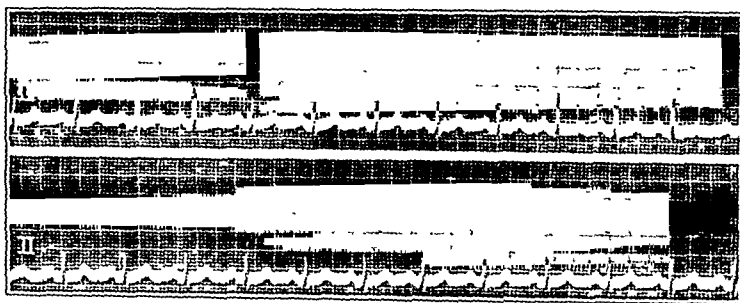


Fig 2 (case 1)—Simultaneous continuous electrocardiogram (lead 2) and radial pulse and respiration curve. In the top strip brief periods of electrical alternation of 1 to 3 cycle duration may be seen apparently related to inspiration. Record taken May 1, 1933.

a possible malignant condition (location of the primary tumor could not be determined) with metastases into the pleura and the heart.

The necropsy revealed a primary carcinoma of a tertiary bronchus with extension into the lung and metastases to the pleura, mediastinal nodes, pericardium, innominate bones, the second, third and fourth lumbar vertebra and the urinary bladder.

Microscopically many small carcinomatous metastases were found throughout the myocardium.

³ Kirch E. in Lubar, Ch. Otto, von Ostertag, R. and Iren, W. *Friedrichs allg Path u path Anat* 23: 382, 1930.

⁴ Buchner F. *Beitr z path Anat u z allg Path* 89: 644, 1932.

LITERATURE

Pezzi⁵ in 1922, Chini⁶ in 1927 Galata⁷ in 1928 and Condorelli⁸ in 1929 were the first Italian writers to call attention to electrical alternans. Isolated electrical alternans was first described by the English investigator Mines⁹ in 1913 in the electrograms obtained from the

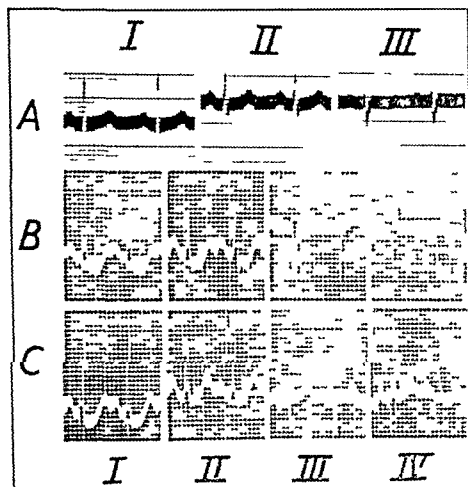


Fig. 3 (case 1)—A July 13 1934 showing absence of alternans. B December 4 effect of an anginal seizure with blood pressure 145 systolic 100 diastolic. C ten minutes later relief due to glyceryl trinitrate with blood pressure 130 systolic 75 diastolic. Patient died December 13.

frog's heart. A very complete and critical summary and discussion of the literature up to 1930 may be found in the French monograph by Poumaillou¹⁰ on pulsus alternans. Poumaillou concluded that there are two forms of electrical alternans having different significance: (1) alternation of the T wave or without alternation of QRS which has the same significance as mechanical alternation; and (2) alternation of the QRS complex or any of its components which is transient and totally unrelated to mechanical alternation.

Bruno Kisch¹¹ considers cardiac alternation in the same terms as Mines and Hering, namely that it is an expression of the mechanical behavior of the ventricles. He believes that all types of alternans are simply expressions of a basic alternans of the heart ('herz

Marked narrowing of mouth of the right Coronary Artery by Calcified plaque

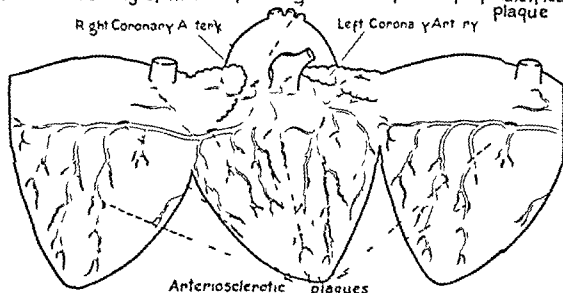


Fig. 4 (case 1)—Sketch of the heart showing the atypical distribution of the coronary arteries and the location of the lesions found within the coronary arteries.

alternans"). This phenomenon may in various instances be demonstrated best by the electrocardiogram by the pulse curve or by other methods of examination. Kisch points out that electrical alternans may

consist of variations in either the amplitude (height), contour (form), direction or duration of the involved complexes. The most frequent forms are those involving T alone or both the QRS and T waves. Hering¹¹ in 1910, working on the mammalian heart, believed that alternation of QRS was an expression of alternation of the papillary muscles. Condorelli⁸ attributed the phenomenon to alternation in the conduction pathways. Condorelli¹² agrees with Kisch that clinical as well as experimental alternans is clearly an expression of exhaustion of the myocardium. He also agrees that electrical alternation probably has the same significance as regards prognosis as alternation of the contractile strength of the heart.

The literature contains many references to so called coronary alternans, both experimental and clinical. Lewis¹³ in 1910 was among the first to demonstrate alternans of the heart following coronary occlusion. Condorelli¹² described electrical and pulsus alternans in man following disturbances in coronary function and also reported isolated electrical alternation in the dog's heart following coronary occlusion. Kisch found that interference with the nutrition of the dog's heart through coronary closure may cause alternation even in the absence of an increase in heart rate, an alternation most marked in that portion of the ventricles in

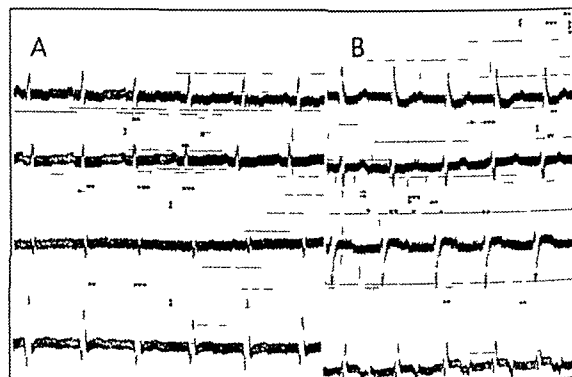


Fig. 5 (case 2)—A electrical alternation in leads 1, 2, and 4 involving only the QRS deflections. Records obtained April 6 1934 eight days before death. B record of alternation in auriculoventricular conduction (PR intervals) accompanied by concordant alternation in the PP interval and discordant alternation in the RR interval observed in a patient diagnosed clinically as having a recent coronary occlusion and enlargement of the large bowel. The electrocardiogram is typical of a recent coronary occlusion with myocardial infarction.

which the most serious nutritional impairment exists. The alternation promptly disappears following removal of the coronary ligatures.

COMMENT

The electrocardiogram in our first case falls into the first of Kisch's² etiologic types, namely, the so called coronary alternans. The transitory character of the electrical alternans which is so unlike pulsus alternans may account for the rarity of observed and recorded cases. It is a phenomenon that should be carefully looked for even when mechanical alternans is not demonstrable.

The electrical alternans in case 2 is, in view of the autopsy, also attributable to coronary insufficiency in this instance resulting from the multiple tumor emboli obstructing the blood flow. Although no mention is made of the clinical presence of pulsus alternans in the second case, we cannot be certain that this is not an instance of electrical alternans with mechanical alter-

⁵ Pezzi C. Arch. d. mal. du cœur 15: 378 (June) 1922.

⁶ Chini V. Cuore e circolaz. 11: 94 (Dec.) 1927.

⁷ Galata G. Cuore e circolaz. 12: 178 1928.

⁸ Condorelli Luigi. Arch. di pat. e clin. med. S. 428 (April) 1929.

⁹ Mines G. J. Physiol. 46: 9 1913.

¹⁰ Poumaillou Marcel. Le pouls alternant. Paris: Masson et Cie.

1910.

¹¹ Hering H. E. Ztschr. f. exper. Path. u. Therap. 7: 363 1910.

¹² Condorelli Luigi. Die Ernährung des Herzens. Leipzig: Theodor.

Steinkopf, 1932.

¹³ Lewis Thomas. Quart. J. Med. 4: 141 1910.

nans rather than isolated electrical alternans. In this instance, in contrast to the first case, the electrical alternans was observed accidentally in the last weeks of the patient's life.

It is possible from the nature of the anatomic lesions in these two cases that electrical alternans may ensue more readily in the presence of widely disseminated small coronary occlusions and multiple minute myocardial dissolutions than from more extensive isolated lesions. If this is so, its demonstration will be useful in the type of alternans arising on a coronary insufficiency basis.

The relation of the electrical alternans in case 1 to respiration seems established from our records. The precipitating factor in all likelihood is a reflex from the lungs to the heart impairing the conduction of the impulse within the ventricles. It is possible, but less likely, that the mechanism is some respiratory disturbance of the cardiac dynamics.

There is sufficient evidence in the literature and in our first case to show that the electrical and the mechanical alternation appear clinically independently of each other and consequently by experience might be found to have different clinical significance, as Proumoulloux states. The absence of one form of alternans does not rule out the presence of the other. This is of great practical significance, since the examiner should not be satisfied merely to determine the presence or absence of pulsus alternans but also should look for the presence of alternation in the veins, the apex beat, the heart sounds and the electrocardiogram.

The primary disturbance in all types of alternans is alternation in the physiologic response of parts of the heart. It is very easy to conceive of a distribution of alternating fractions in the heart such that the mechanical summation makes the alternans practically nonapparent with the methods available for recording mechanical events, while the electrical balance is favorable for a marked electrical alternans. The converse situation is also easy to appreciate, namely a manifest mechanical alternans with neutralization of the electrical stresses such that the electrical alternans is not apparent. Since the distribution of the alternating parts of the heart is the factor determining the form the alternans will assume, more attention, it seems to us, should be paid to the thorough examination of the patient to rule out completely the presence of alternans of any type.

A typical example of the effect of location of the alternating fractions in the conduction system is shown in figure 5B. This is an unusual electrocardiogram in which the alternation consists of alternation of auriculoventricular conduction without any alternation of the various electrocardiographic complexes. This peculiar alternation is associated with a concordant alternation of the PP intervals and a discordant alternation of the RR intervals. The only previous report we have seen is one by Carter and Faulkner¹⁴ in which the alternation in auriculoventricular conduction occurred in the turtle heart. The patient from whom this unusual electrocardiogram was made a private patient of Dr Nathan Cohn had a carcinoma of the large bowel and a recent coronary occlusion developed a few days before the electrocardiogram was taken. He had also been given digitalis. The electrocardiogram is typical of recent coronary occlusion and shows sinus rhythm, first degree auriculoventricular block and left ventricular preponderance in addition to the peculiar type of alter-

nation. The P wave is buried in the T wave but its position varies alternately. This is due partly to the alternation of the PR interval and partly to the alternation of the PP interval.

The possibility of different prognostic significance of the various types of alternans should for the present be held *sub judice*. In arriving at a prognosis one should pay attention rather to other circumstances accompanying the alternans, such as the heart rate, the presence of extrasystoles and the clinical state of the patient. The occurrence of electrical alternans in paroxysmal tachycardia is not at all uncommon and is of no serious moment. When electrical alternans occurs at slower heart rates, however, as in the two cases examined post mortem, it should be viewed with grave concern, a finding stressed by Chini.⁶

The transitory nature of electrical alternans in our first case might be attributed to improvement of the heart, but it is just as likely, if not more likely, that its disappearance has exactly the opposite significance, namely, that the condition of the heart has become worse. Alternans implies that at a certain stage of the heart's weakness certain regions are unable to respond normally to every stimulus but fluctuate alternately between a better and poorer response—or even no response. As the condition of the heart progresses downward the condition is changed and the heart may give a poor but constant response to every stimulus.

SUMMARY

1 In a case of transient isolated electrical alternans autopsy revealed an anomalous distribution of the right coronary artery with a calcified plaque markedly narrowing its mouth, generalized coronary arteriosclerosis and multiple microscopic myocardial infarcts. In a second case of possible isolated electrical alternans autopsy revealed multiple minute carcinomatous metastases within the myocardium and in the blood vessels of the heart. In the instance of alternans in auriculoventricular conduction no similar clinical report was found in the literature.

2 It seems likely that the anatomic lesions in the first two instances, by leading to malnourishment of fractions of the heart, were responsible for the electrical alternans. They are therefore both of the coronary type of Kisch. The appearance of electrical alternans in instances in which the myocardial lesions are small and scattered may be significant.

3 A search of the literature revealed the rarity of isolated electrical alternans, our first case being the first described in this country and the first published with necropsy data.

4 The transitory nature of electrical alternans is demonstrated in our first case.

5 There is a grave prognostic significance of electrical alternans.

6 While alternans of the heart may appear in several forms there is evidence to show that fundamentally the mechanism is identical in all instances, namely, alternation of activity of portions of the heart. The form taken by the alternans will depend on the distribution of the alternating portions of the heart.

7 The transient character of electrical alternans emphasizes the need for closer scrutiny of electrocardiograms. The gravity of alternans and the fact that it sometimes appears only in the electrical form emphasizes the need of becoming more "alternans conscious." If more attention were paid to electrical alternans, probably many more instances would be found.

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¹⁴ Carter, E. I. and Faulkner, T. M. Bull. Johns Hopkins Hosp. 42: 245 (May) 1935.

A METHOD OF ROENTGEN DIAGNOSIS OF NONOPAQUE FOREIGN BODIES IN THE ESOPHAGUS

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AND
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The detection and demonstration of nonopaque foreign bodies in the esophagus is a frequent and treacherous problem in roentgenology. By far the most common offender is a small piece of bone from a fowl or fish. These bones, which are usually from young animals and are consequently incompletely ossified and calcified and in which the calcium content has been further reduced by cooking, are relatively nonopaque to x-rays. The bone most frequently encountered, according to the Jacksons¹ and in our experience, is a fragment of the sternum of a chicken. A piece of rib is next in order.

Another type of radiolucent foreign body is buttons, many of which are transparent to roentgen rays and require the aid of a barium mixture for their visualization. A firm bolus of food, especially meat is a third type of radiopaque foreign body when halted in its passage by inherent or adjacent lesions of the esophagus, e g, mediastinal tumors, aneurysms, carcinomas or strictures of the esophagus, enlargements of the thymus or thyroid, or an enlarged left auricle. This type of foreign body as a rule is readily identified with the use of an opaque meal because it produces a complete esophageal obstruction and the existence of offending lesions can be easily recognized.

The customary site of lodgment² of esophageal foreign bodies is at the level of the suprasternal notch, as it is normally the narrowest segment of the esophagus.³ Lesser constrictions occur at the introitus, at the level of the crossing of the left bronchus and at the diaphragmatic pinchcock. These levels must be kept in mind, as opaque mixtures may lag in traversing them and lead to an erroneous diagnosis.

The symptoms produced by nonopaque esophageal foreign bodies are in no wise different from those which are opaque. Patients who have swallowed a foreign body give a history of an initial choking. They are excited and apprehensive and complain of a persistent gagging or "obstructive" sensation. Dysphagia and odynophagia are cardinal symptoms. The movements of swallowing are exaggerated, and drooling is occasionally present. These patients rightfully regard the condition as an emergency.

Small jagged pieces of bone lodge because their sharp edges become partly embedded in the walls of the esophagus and the chance of producing a complete penetration with its consequent mediastinitis is always imminent. It was with the idea of minimizing this risk that the radiographic and roentgenographic technic to be described was developed.

Before the examination, all clothing must be removed. The films and fluoroscopic studies must include the nasopharynx and the stomach. Only films technically perfect are acceptable and quick exposures (from one-

fifteenth to one-twentieth second) are absolutely necessary for the elimination of blurred shadows resulting from movement.

Anteroposterior and lateral views of the neck are the first films made with the hope of visualizing the suspected fragment before resorting to the use of opaque mediums. The lateral exposure (fig 1) is more helpful as the hypopharynx is not obscured by the overlying cervical spine. Chamberlain and Barton⁴ warn against mistaking areas of ossification in normal laryngeal cartilages for foreign bodies and emphasize the importance of accurately identifying them.

If the preliminary films do not demonstrate the object, the patient is placed before the fluoroscope and given a thick suspension of barium sulfate in water and carefully observed to determine whether there is a deviation or division of the stream or a filling defect of the esophagus. After several swallows of the opaque



Fig 1 (case 1).—Lateral scout film of neck demonstrating a fragment of chicken rib in the esophagus at the level of the suprasternal notch.

mixture, the esophagus is carefully searched for residual flecks of barium that might be clinging to the foreign body. Even if the diagnosis of a radiolucent foreign body is established, we feel that at least one film of the entire esophagus should be made if only to serve as a matter of record. When the evidence is inconclusive, roentgenograms are absolutely essential because of their greater contrast and detail.

We have obtained the best results by using a very thin watery solution of barium—so thin that the esophagus when filled is not completely opaque. The patient holds a glass of this mixture in his left hand while standing in front of the regular cassette changer and is instructed to drink the solution through a glass tube in small, rapid swallows in an effort to maintain a continuous stream down the esophagus. Exposures are made in both the anteroposterior and the right anterior oblique position, which is preferred to a lateral view, as the region of the suprasternal notch is better visualized. This barium mixture coats the esophageal walls as iodized oil does the bronchi, and on meeting a foreign

From the Edward Mallinckrodt Institute of Radiology, Washington University School of Medicine.

¹ Jackson on Chevalier and Jackson on C I. *Annals of Roentgenology*. New York: Paul B. Hoeber, Inc. 16: 62, 1934.

² (a) Jackson, (b) Manges, W. F. *Am J Roentgenol* 17: 44, 50 (Jan.) 1927.

³ Jackson on C M in Morris. *Human Anatomy*, ed 8. Philadelphia: P. Blakiston, Son & Co. p 1167.

⁴ Chamberlain, W. E. and Young, B. R. Ossification (So Called Calcification) of Normal Laryngeal Cartilages Mistaken for Foreign Body. *Am J Roentgenol* 33: 441-450 (April) 1935.

body it produces a constant filling defect. In addition, it coats the object, which is then demonstrated as a constant collection of opaque material within the lumen of the esophagus. It should be emphasized that both the filling defect and the mass of barium in the lumen coinciding with it must be present in both views or in subsequent films. The following cases demonstrate the technic and show the foreign bodies.

CASE 1 (fig 1, kindness of Dr J B Costen)—A white woman, aged 44, a housewife, entered Barnes Hospital Aug 21 1926 with a history of "choking" on a chicken bone. The preliminary films established the diagnosis. Esophagoscopy was performed and the partially embedded fragment was removed on the second attempt.

CASE 2 (fig 2, kindness of Dr M F Arbuckle)—A white woman, aged 39, a housewife, entered Barnes Hospital March 4 1935, with the history of having swallowed a chicken bone several hours previously. Scout films failed to show the foreign body. Roentgenograms made during the swallowing of a thin barium sulfate solution localized the fragment, which was then removed at esophagoscopy. A large mass of meat was clinging to the bone.

CASE 3 (fig 3)—A white man, aged 42 married, a salesman entered the hospital Dec 12 1934 complaining of dysphagia and odynophagia with the history of having swallowed a chicken bone three days previously. It was demonstrated by

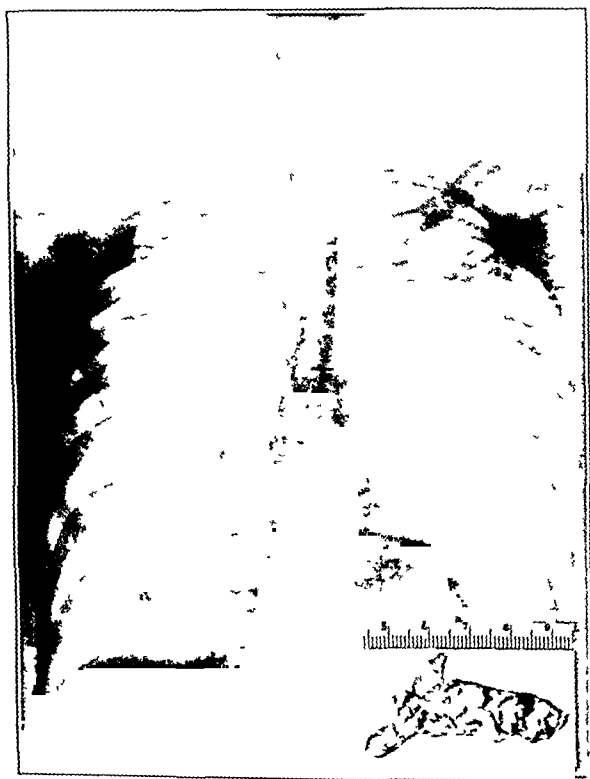


Fig 2 (case 2)—The anteroposterior film of the esophagus shows a persistent filling defect of the wall and a constant mass of barium in the lumen. Note how the barium coats the mucosa without producing complete opacity of the tube. (Also see figure 3.)

the use of thin barium sulfate. The fragment was not seen in the preliminary films. At esophagoscopy Dr M F Arbuckle found and removed a piece of chicken rib at the predetermined site.

We have abandoned the practice of having patients swallow bariumized biscuits, pledgets of cotton saturated with barium sulfate, or capsules filled with

bismuth subcarbonate^{2b} because the weight of these substances on a sharp foreign body, aided by prolonged esophageal peristalsis, may produce a complete penetration. The fact that such opaque solids move slowly and may even stop in their passage through the lower part of the esophagus makes them unreliable agents in exploring this segment. Incidentally, we feel that an effort should be made to discourage the common

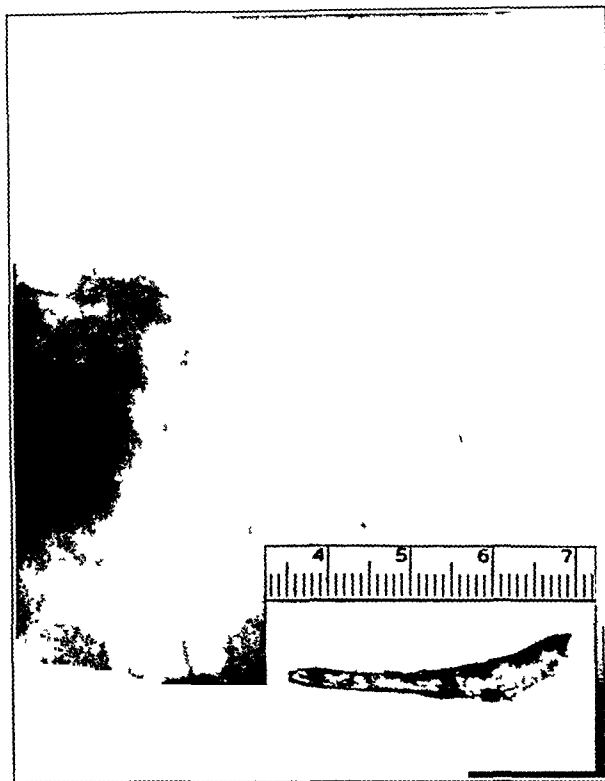


Fig 3 (case 3)—A right anterior oblique view of the esophagus during the swallowing of a thin barium solution. The foreign body is visualized as a persistent mass of barium within the lumen coinciding with a constant filling defect.

practice of patients forcefully swallowing a large firm bolus of food in an effort to dislodge a jagged intruder, as not only does it increase the danger of perforating the esophagus but the presence of residual food obscures the foreign body and becomes a hindrance to esophagoscopy. While reviewing the literature, we inadvertently found several case reports⁶ in which small nonopaque bones perforated the esophagus and produced severe infections.

As foreign bodies are prone to shift and change positions, esophagoscopy should be performed as soon as possible after the diagnosis has been established. Furthermore, as pointed out by all writers in this field, esophagoscopy is indicated in spite of a negative roentgenoscopic and radiographic examination if the patient's history and symptoms point to a foreign substance.

SUMMARY

1. A routine free from the risks of methods employing solid or semisolid opaque mediums is desirable in diagnosing nonopaque foreign bodies in the esophagus.

6. Pincoast H K. Roentgenology of the Pharynx and Upper Esophagus. *Am J Cancer* 17: 373-395 (Feb.) 1933 (chicken bone). Saltzstein H C. Duck Bone Impacted in Lower End of Esophagus. *Erosion of Oesophageal Wall. Fatal Haemorrhage.* *Ann Surg* 95: 794-797 (May) 1932. Ginsburg Louis. Perforation of the Esophagus by a Chicken Bone. *Ohio State M J* 27: 568-570 (July) 1931. Iglauder Samuel and Ransohoff J L. Perforation of the Esophagus by a Foreign Body (Rabbit Bone) with Report of a Case. *Preventing Unusual X-Ray Signs.* *Laryngoscope* 34: 821-825 1924.

5. Wilson W F. Oesophago-copy. A Means of Detecting Foreign Bodies Non Opaque to X-ray. *Brit M J* 1: 656 (April 4) 1925.

2 The routine consists of first taking anteroposterior and lateral "scout" films of the neck in the hope of visualizing the object second, if these are negative the patient is observed by the fluoroscope while swallowing a very thick barium mixture and any delay, filling defect deviation or division of the column is noted, third, anteroposterior and oblique roentgenograms are made during the rapid swallowing of a thin barium sulfate solution The presence of a constant filling defect and a persistent mass of barium in the lumen constitutes sufficient evidence for the diagnosis of a nonopaque foreign body

3 Rapid exposures (from one-fifteenth to one-twentieth second) and technically perfect films are necessary

4 As foreign bodies are prone to shift esophagoscopy should be done as soon as the diagnosis is established

5 Esophagoscopy is indicated even with a negative roentgenoscopic and radiographic examination if the patient's symptoms are those of a foreign body

6 Propaganda should be disseminated among the public as a warning of the danger of completely perforating the esophagus by forcefully swallowing a large bolus of food in an effort to dislodge a sharp foreign body

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HEREDITARY ECTODERMAL DYSPLASIA OF THE "ANHYDROTIC TYPE"

WITH SYMPTOMS OF ADRENAL MEDULLA INSUFFICIENCY AND WITH ABNORMALITIES OF
THE BONES OF THE SKULL

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In 1838 Widderburn reported a very striking anomaly of the skin which he observed in ten males of a Hindu family. The symptomatic triad of this anomaly consisted of complete inability to sweat (anhidrosis), a deficiency of the scalp axillary and pubic hair (hypotrichosis) and partial absence or an incomplete development of the teeth (anodontia). In recent years Thadani has reported similar cases occurring in Hindu families from a district where inbreeding is common.

Among Europeans Thunman in 1848, Williams in 1848, Guilford in 1883 and Hutchinson in 1886 described similar hereditary ectodermal anomalies. Guilford in 1883 reported the existence in his patient of a saddle nose and established the fact that the afflicted members of the patient's family had the same deformity of the nose. Hutchinson observed a defect on the mamilla, a finding that is not present in all cases. In the German literature Tendler in 1902, Weichselmann and Loewy in 1911 and Crist in 1913 described families with this congenital disease. In these cases attention was called to a decrease of intellect and a deformity of the auricles (satyr auricles). In recent years several other cases have been reported in the American and German literature and the name hereditary ectodermal dysplasia of the anhydrotic type has been adopted for this hereditary disease. In reports in the American literature there are cases which exhibit only the dystrophy of the hair and nails without changes in the sweat or sebaceous glands or in the skull contours (McKay and Davidson). Transmission by both

sexes is manifest in these cases of McKay and Davidson. Gordon and Jamieson¹ justifiably differentiate a group only with dystrophies of the hair and nails from the ectodermal dysplasia of the "anhydrotic type." Clouston reported 119 cases in six generations with dystrophy of the nails and hair. Some of this family exhibited only keratoderma plantaris et palmaris. Clouston believed that these were due to residual forms of an ectodermal dysplasia of the anhydrotic type. It may be that one or the other of the manifestations of the hereditary ectodermal dysplasia may be observed occasionally as formes frustes. Perhaps the hereditary alopecia belongs to this group of hereditary dysplasia. It is evident that there is some relationship between all these features of hereditary ectodermal dysplasia, but

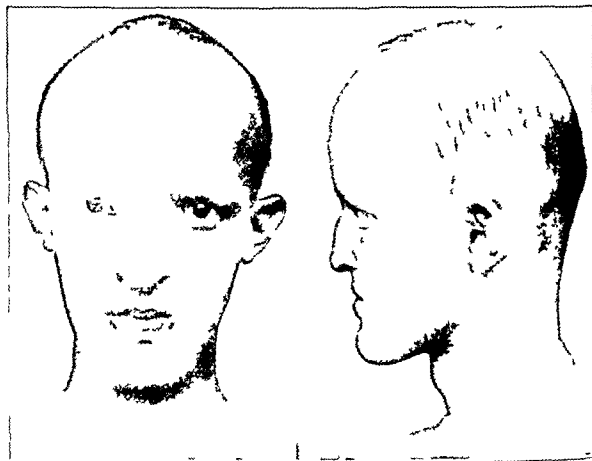


Fig. 1—Front and side view of patient

it is desirable to differentiate two main clinical syndromes, one consists of the symptomatic triad of anhidrosis hypotrichosis and anodontia and the other dystrophies of the hair and nails. The first group is transmitted by females and appears for the most part in males; the second may be transmitted by either sex and appears in both men and women. Siemens, utilizing the pedigree of Weichselmann demonstrated that the transmission of hereditary ectodermal dysplasia of the anhydrotic type is recessive and obligatory to sex. The same type of transmission is known to exist in hemophilic families. It must be mentioned here that Guilford in 1883, Gauer mann in 1920 and Gordon and Jamieson in 1932 reported cases of women afflicted with hereditary ectodermal dysplasia of the anhydrotic type so that exceptions from the rule of transmission are still to be explained.

Following are the history and clinical observations in a case of hereditary ectodermal dysplasia of the anhydrotic type. They are remarkable in four points: 1 The patient has a pedigree confirming the fact that transmission is recessive and obligatory to sex. 2 The patient did not perspire until his sixteenth year. Subsequently he began to sweat but up to the present time sweating has occurred scantily and infrequently. 3 The patient exhibits signs of insufficiency of the adrenal medulla (the adrenal medulla is an ectodermal organ). 4 The roentgenograms of the skull show a deformity

¹ Gordon, W. H. and Jamieson, R. C. Hereditary Ectodermal Dysplasia of the Anhydrotic Type. *Ann. Int. Med.* 5: 358-370 (Sept.) 1931. A complete bibliography up to 1933 is given by Gordon and Jamieson and also by Jadasohn. *Handb. d. Haut u. Geschlecht* 4: 44, 1933. See also Herbert, J. M. and Garland, Joseph. Hereditary Ectodermal Dysplasia of the Anhydrotic Type, with Case Report. *New England J. Med.* 210: 784-785 (April 12) 1934.

of the bone typical of exostoses of the inner table of the skull a hitherto undescribed feature of hereditary ectodermal dysplasia of the anhydrotic type

REPORT OF CASE

History.—H K, a man aged 23 a German complained of weariness in the late afternoon, weakness of the lower limbs and very often toward evening a slight rise in temperature (from 37.5 to 37.7 C., or 99.5 to 99.8 F.) which prevented him from working.

Even as a child his hair was quite sparse. At the age of 17 he lost his hair entirely and a lanugo-like fine hair began to grow in its place. He stated that the axillary and pubic hairs never developed completely. Only a few short brittle hairs were noted in the axillae and over the pubes. The first teeth developed incompletely. From the history it was learned that there had never been complete development of the deciduous teeth. In fact the incisors never appeared. Before his sixteenth year he had never perspired. As a boy, physical exertion produced no moisture of the skin only palpitation. He was unable to play with other children during the summer months as he became exhausted rapidly. Since the age of 16 he had begun to perspire but the sweating which came on chiefly after exertion was slight inconstant and in his opinion insufficient. At the time of examination he felt very uncomfortable and was unable to continue his work during hot weather. Weakness in the legs shortness of breath and slight tremor of the extremities followed even relatively slight exertion.

Examination.—He was 182 cm. in height and weighed 70 Kg. The skull was enlarged in circumference (61 cm.). The forehead was abnormally high and vaulted. The bones of the face were small. The outlines of the head resembled a hydrocephalus. There were only a few fine lanugo-like hairs scattered over the

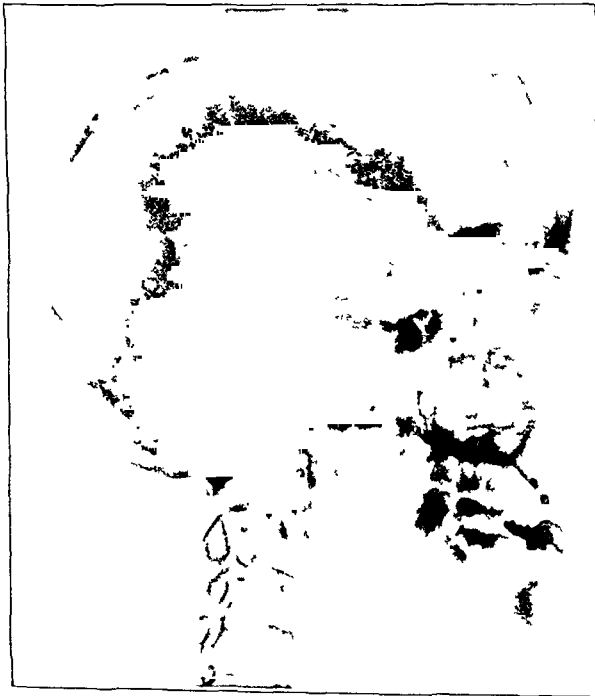


Fig 2—Side view of skull

scalp and a few scant short hairs were observed in place of the eyebrows. There was a lack of secondary sex hairs only a small number of short, dry hair stumps were seen in the axillae and mons veneris. No hairs were present on the forearms or legs. The root of the nose was sunken the forehead bulged over the root of the nose. The peculiar shape of the

2 He complained of the symptoms very frequently to his physician but the only objective finding was a slight rise in temperature when he felt exhausted. The physician suggested an endocrine disturbance.

nose has been described as a saddle nose in the literature. A saddle nose is formed by a defect of the nasal bones especially the median bone. The outline of the nose in this disease however does not result from a defect in the nasal bones but is due to an abnormal prominence of the forehead. The lips were negroid. The outlines of the skull nose and lips are similar in all cases in which photographs are published. In

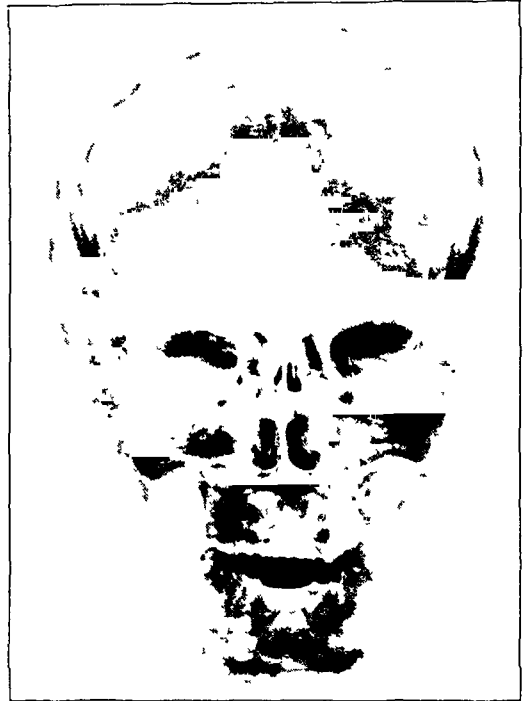


Fig 3—Front view of skull

fact all these patients resemble one another so closely that they might be members of the same family. The front teeth of the upper and lower jaw were artificial. Roentgen examination showed atrophy of the middle parts of the jaws and confirmed the reports of the patient that the greatest number of the anterior teeth had never developed. Both tonsils were present. There was no secretion from the nose or pharynx.

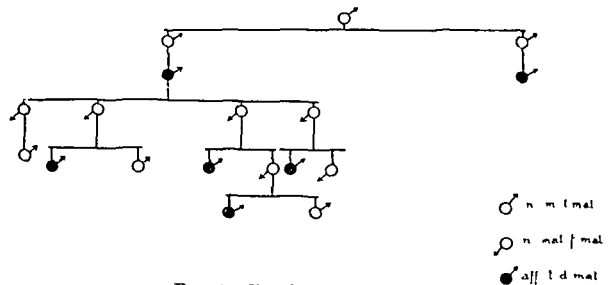


Fig 4—Family tree of patient

The ozena mentioned in most of these individuals was not observed in this patient. The sinuses were abnormally small in the roentgenogram. The skin was dry and smooth almost feminine in character. Pigmented areas were noticed in the back and on the abdomen. The color of the pigmented areas was brownish gray and cloasma like. There was no hyperkeratosis. The thyroid was normal in size. No glands were palpated in the neck axillae or groin. The thorax was normally developed. Clinical and roentgen examinations of the lungs were normal. The heart was normal in size being 8 cm. to the left of the midline and 4 cm. to the right. There were no murmurs. The rhythm was normal. The blood pressure was 90 mm. of mercury systolic and 60 diastolic. The liver and spleen were not enlarged. The sex functions were normal. Knee and ankle tendon reflexes were normal. The Babinski reflex was negative. The daily oscillation in temperature was

usually greater than 1 degree centigrade from 36.2 to 37.5 C or 97.1 to 99.5 rectal. After exercise the temperature rose above 38 C (100.4 F).

The formation of the cranium resembled somewhat the shape of an ocephalic skull. The sutures however were all present including a persistent frontal suture. There was marked bony overgrowth of the sinus table which formed edges projecting into the cranial cavity (general exostosis of the inner table). In contrast to the large cranium the facial bones were underdeveloped particularly the mandible and the maxilla. All the sinuses were small. The medial and lateral incisors in both jaws were absent or incompletely developed.

Urinalysis was negative for albumin, sugar and urobilinogen. The sediment contained some leukocytes. Blood examination revealed hemoglobin 95 per cent, erythrocytes 5,200,000 per cubic millimeter, leukocytes 5,800 per cubic millimeter, polymorphonuclears 57 per cent, band forms 3 per cent, lymphocytes 37 per cent, monocytes 3 per cent. Fasting blood sugar was 70 mg per hundred cubic centimeters. The sugar tolerance curve after the ingestion of 100 Gm of dextrose was 72 mg fasting, 107 mg in one hour, 130 mg in two hours and 82 mg in four hours. The basal metabolic rate was $+16\frac{1}{2}$.

COMMENT

Anhidrosis—The patient was unable to sweat before the age of 16. He then would sweat very slightly following activity. However, weariness, quivering of the lower extremities and slight elevation of temperature still occurred toward evening. In the previously described cases the absence of the sweat glands was a permanent feature. In this patient sweating occurred at the age of puberty but so inadequately that only a small amount of perspiration was produced. The temperature rise following exertion and warm baths has been described in those cases in which observations of the temperature have been made. It is probable that this symptom occurs in all cases of hereditary ectodermal dysplasia of the anhydrotic type. The slight rise of the metabolic rate is doubtless caused by the fact that the body is unable to perform its physical regulation of heat because of the absence or incomplete development of the sweat glands. Woodjatt at the latest meeting of the American College of Physicians pointed out that symptoms of masked hyperthyroidism (slight temperature rise, fatigue and tremor) may occur in patients with ichthyosis universalis as a result of their inability to perspire adequately.

Genealogy—The pedigree of the patient demonstrates inheritance of recessive characteristics obligatory to sex. The description of rare cases of hereditary ectodermal dysplasia of the anhydrotic type in females indicates that exceptions to this rule of inheritance may occur.

Adrenal Medulla—The patient presented signs strikingly suggestive of insufficiency of the adrenal medulla, to wit, low fasting blood sugar, flat sugar tolerance curve, scattered pigmentation of the skin (not mucous membranes) and low blood pressure. Embryologically the adrenal medulla is of ectodermal origin. It seems in this case that the adrenal medulla may also be involved in the hereditary ectodermal dysplasia of the anhydrotic type.

Abnormality of the Skull—Roentgenograms of the skull present a striking deformity with exostosis of the inner table. The skull however is not of ectodermal origin but is developed from the mesoderm. Although roentgenograms of the skull in previous cases are not available it is probable that all cases of hereditary ectodermal dysplasia of the anhydrotic type show this characteristic deformity of the cranial bones since all

the published photographs exhibited great similarity of contour. The resemblance is so striking that, as I have stated before, these patients seem to be members of the same family. Furthermore, the constant deformity of the nose, which has been erroneously termed saddle nose by previous investigators, is evidently not a defect of the nasal bone but rather a bulging of the frontal prominence and a depression of the base of the nose resulting from a narrowing of the sinuses.

POLYPOSIS OF THE COLON

REPORT OF A CASE

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Despite the relative infrequency of its occurrence, a developing knowledge of polyposis of the colon has stimulated increasing interest in this disease. As early as 1721, Menzel¹ reported a case in which there was a general inflammation of the intestinal tract with a number of wartlike excrescences in the colon. In 1861 Luschka² described a colon containing thousands of polyps from the ileocecal valve to the anus, varying in size from a hempseed to a bean. Cripps³ in 1882 observed three cases occurring in the same family. The more recent literature on this subject bears such well known names as those of Murphy,⁴ Lockhart-Mummery,⁵ Erdmann,⁶ Morris,⁴ Gant,⁵ Soper,⁶ Doering and Coffey.⁸

For purposes of standardization, Erdmann⁴ suggested that the term "polyposis of the colon" be limited to designate an adenomatous hyperplasia of the intestinal mucous membrane as opposed to those polypoid tumors of the intestine which are histologically fibromas, myomas, lipomas and angiomas. The disease appears to be a uniform, nonspecific reaction of a preternaturally sensitive mucous membrane to a chronic irritant, a reaction which is variable only in degree. It is manifested grossly as scattered intraluminal tumors varying in size from a split pea to a grapefruit and has a specific predilection for the large intestine and the rectum. This predilection increases in direct proportion to distance from the ileocecal valve.

The simplest classification of this disease is that of Erdmann and Morris,⁴ which divides it into the adolescent and adult types. The adolescent or congenital disseminated type manifests itself in early youth is characterized by chronic recurring attacks of intestinal hemorrhage and diarrhea, and shows a tendency to occur in members of the same family. The adult or acquired type first appears in adult life in association with frank evidences of chronic traumatic and inflammatory lesions, to which it is evidently secondary. The two types have in common a marked predilection for the large intestine, an incidence of malignancy of more than 40 per cent and a tendency to chronic intestinal hemorrhage and diarrhea. They are dissimilar in that in the

¹ Cited by Graham.¹⁰

² Murphy, J. B. S. Clin. Chicago 5: 447, 1916.

³ Lockhart-Mummery, Proc. Roy. Soc. Med. 1918-1919, sect. VII, Surg. p. 43.

⁴ Erdmann, J. F. and Morris, J. H. Polyposis of the Colon, Surg. Gynec. & Obst. 40: 460 (April) 1925.

⁵ Gant, S. G. Diseases of the Rectum, Anus and Colon, Philadelphia, W. B. Saunders Company, 2: 249, 1923.

⁶ Soper, H. W. Polyposis of the Colon, Am. J. M. Sc. 151: 405-409 (March) 1916.

⁷ Doering, Hans. Die Polyposis Intestini und ihre Beziehungen zur Carcinomatosenendogenese, Arch. f. klin. Chir. 83: 194, 1907.

⁸ Coffey, R. C. Colonic Polyposis with Engrafted Malignancy, Ann. Surg. 83: 364 (March) 1926.

adolescent type the polyps appear in almost countless numbers, are widely disseminated and show no gross evidence of a causative lesion, while in the adult type they occur in limited numbers and extent and almost invariably are associated with gross evidence of trauma inflammation or foreign body. The one is essentially a disease of early life, the other of middle or late life, occurring as the cumulative result of prolonged irritation incident to years of functional activity of the intestine. Woodward⁹ proposed a third grouping, characterized by the formation of polyps arising from islands of mucous membrane isolated in the bases of dysenteric ulcers and designated as "pseudopolyposis of the colon."

Graham¹⁰ stated that the diagnosis of the adolescent or congenital type may be definitely established or rejected by sigmoidoscopy, as in this form of the disease the polyps extend down to the anus. Erdmann,⁴ however, noted an occasional exception to this usual observation.

In 1928 Hullsiek¹¹ reported a study of all cases of the adolescent type of polyposis of the colon appearing in the literature and added one case that came under his observation, making a total of 127 cases. Since all cases listed as multiple polyposis of the colon were included, it is probable that at least a number did not belong to the congenital type, but some that were given in sufficient detail to mark them as obviously belonging to the acquired type were excluded. In this series, 66 per cent occurred between the ages of 15 and 35, 53 per cent occurred in men and 47 per cent in women, malignant disease was known to be present in forty-two cases, and in thirty-one other cases in which the presence of a malignant condition remained in doubt the patients died rather early of cachexia, inanition or bleeding. It is only fair to assume that the index of malignancy is actually higher than the figures represent. Mummary¹² stated that "almost all cases of multiple polypi of the colon eventually become malignant." The high incidence of malignancy is a factor of primary importance, which must be considered in the treatment of this disease.

Therapy naturally falls into two classes, palliative and radical. Because of the serious danger of malignant transformation, palliative measures such as cecostomy and appendicostomy are not to be considered except in the exceptional case. On the other hand surgical extirpation of the entire large intestine or several segments of it is a formidable procedure and is not to be undertaken lightly. Usually there is present a complicating anemia or some other debilitating condition.

Extirpation of the colon for diffuse lesions may be undertaken with two objectives in mind. If the polyps are largely confined to the colon proper, one considers sacrifice of the large intestine and the transplantation of the ileum into the rectum, thus saving the sphincteric mechanism. Small polyps that are present in the rectum may be destroyed by fulguration. When the rectum is involved in such a way as to preclude saving it, a three-stage operation is most desirable: first, an ileostomy; second, subtotal colectomy down to or near the rectosigmoid juncture; and, third, a combined abdominoperineal resection of the rectosigmoid and rectum. A rapid loss of fluids from the body follows an ileostomy

and necessitates a considerable amount of rehabilitation before the patient is able to stand an extirpation of the colon without grave danger. It is however, possible to wait for months between the first and second stages if it is felt that malignancy has not already developed. Again after the second stage, a rest period may be given the patient before the resection of the rectosigmoid and rectum is undertaken.

In the case here presented, it is problematic whether the polyposis resulted from a bacillary dysentery or whether the dysentery was merely a complicating factor secondary to the congenital type of polyposis of the colon.

REPORT OF CASE

Mrs. R. G., a Cuban woman aged 23, was admitted to the Tampa Municipal Hospital June 17, 1933 complaining of fever and bloody diarrhea. She stated that the diarrhea began two months previously with about twenty stools daily and that for

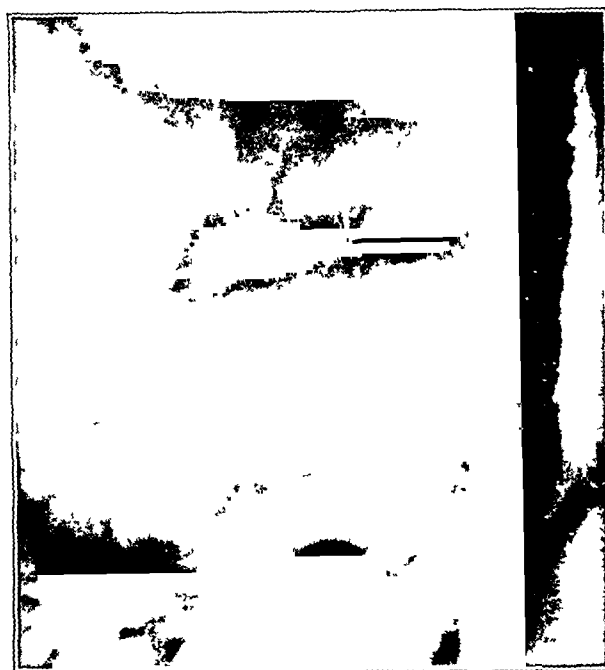


Fig. 1—Appearance after barium sulfate enema

the three weeks immediately prior to admission she had been obliged to remain in bed because of weakness. Her history was essentially negative. She had had two children and no miscarriages. There was no history of similar complaints in her family.

On admission her temperature was 103.8 F, pulse 120, respiration 20. The skin was hot and dry. There were several carious teeth. The abdomen was somewhat distended and generally tender, particularly in the left lower quadrant. The spleen was just palpable. Examination of the blood showed hemoglobin 52 per cent, red blood cells 3,800,000, white blood cells 19,000, polymorphonuclears 83 per cent, small lymphocytes 13 per cent, large lymphocytes 2 per cent, transitionals 2 per cent. Urinalysis was negative. A tentative diagnosis of either amebic or bacillary dysentery was made.

The patient continued to have a high fever and had from fifteen to twenty stools daily. July 10 the blood showed a complete agglutination to the Shiga bacillus in 1:80 dilution. Meanwhile the hemoglobin had dropped to 35 per cent with a red cell count of 2,130,000. Following a blood transfusion, July 25 the hemoglobin increased to 48 per cent. The patient was given serum treatment for dysentery but showed little improvement.

In the meantime Dr. Jack Halton, proctologist of the hospital, had examined the patient and on July 10 noted that there was marked proctitis present, extending from the internal sphincter to the sigmoid with a continuous seepage of bright red blood

⁹ Woodward, I. J. *Am. J. M. Sc.* 81, 142, 1881.
¹⁰ Graham, H. F. Multiple Adenomas of Colon (Polyposis). *Am. J. Surg.* 734 (Sept.) 1928.
¹¹ Hullsiek, H. E. Multiple Polyposis of the Colon. *Surg. Gynec. & Obst.* 47, 46 (Sept.) 1928.
¹² Mummary, P. I. Diseases of Rectum and Colon and Their Surgical Treatment. London: Baillière Tindall & Cox, 1923.

from innumerable points over the whole surface of the rectal mucosa most marked from the internal sphincter to the lower valve of Houston. Proctoscopic examination on July 25 and again on August 4 showed some improvement. Dr. Halton reported on September 1 that there were few bleeding points and that the mucosa appeared practically normal. When the patient was discharged on September 14 she was much



Fig. 2—Appearance after opaque meal

improved and was advised to continue treatment at Dr. Halton's office.

September 24, just ten days after being discharged, the patient was again admitted to the hospital. She stated that she had had a recurrence of symptoms because of poor home care and diet. Physical examination was essentially the same as when she was first admitted, but her hemoglobin was down to 23 per cent. Transfusions were performed on October 18 and November 5. She continued to have from ten to fifteen stools daily. Her general condition was perhaps worse; she was very nervous and hysterical and was therefore rather uncooperative and difficult to manage. She was discharged the second time on Jan. 7, 1934.

The patient was admitted to the hospital for the third and last time Aug. 3, 1934. Her condition had grown steadily worse. She continued to have bloody stools. The laboratory tests for bacillary dysentery were negative as were also the Kahn and Kolmer examinations of the blood. Transfusions were given on August 21 and 28 and on September 4 and 15, but the beneficial results were only transient.

September 10, after the patient had been given a barium sulfate enema, a roentgen study was made by Dr. J. C. Dickinson. The rectum and sigmoid filled fairly normally, but only after the patient had experienced great difficulty in retaining the solution was the colon finally filled to a point just to the right of the vertebral shadow. There was complete absence of haustration and the outline of the colon was very irregular with innumerable filling defects throughout. As the observations were not sufficiently diagnostic, a roentgen study of the entire gastro-intestinal tract was made. The stomach was fish hook in type and orthotonic. Neither in the stomach nor in the duodenum were there filling defects, but in the second portion of the duodenum there was a moderate amount of dilatation. At the end of five hours the stomach was perhaps half empty and the coils of the ileum were definitely dilated. After seven hours had elapsed practically all the meal was retained in the

coils of the small intestine, apparently a normal condition except for dilatation in the coils of the ileum. A very small amount of the meal had passed completely through the colon and could be seen in the rectum. At the end of nine hours the colon was outlined throughout and presented a very feathery appearance with innumerable negative areas surrounded by thin lines of the opaque meal. Three hours later it presented much the same picture except that practically all the meal was in the sigmoid and rectum. The distal five or six inches of the ileum could still be seen barely outlined by a thin streak of the opaque material. At the end of twenty-four hours only a trace of the meal remained in the colon and its appearance had not changed.

In his report Dr. Dickinson concluded: "In trying to visualize the pathology that could produce this very unusual appearance of the colon it seems necessary to assume the presence of some diffuse pathological condition resulting in a very roughened surface of the mucous membrane with countless elevations allowing the opaque material to settle in the recesses between them. Innumerable small polypi would account for this condition. A roughly granulated surface due to ulceration and growth of granulation tissue might explain it. The delay in the terminal ileum is to me explained as a diffuse reaction of an irritated intestine distal to it. It is difficult to visualize so extensive an ulcer lesion. I am inclined to believe that the condition is one of polyposis."

Because of these conclusions the medical service requested a surgical consultation. On October 4 an exploratory laparotomy was done. Dr. Halton was present at this operation prepared to insert a sigmoidoscope into the colon. When the peritoneum was opened about a liter of clear serous fluid escaped. The cecum was firmly bound down and could not be delivered from the wound. It was therefore deemed inad-



Fig. 3—Pathologic specimen secured at autopsy

visable to open the intestine for the introduction of the sigmoidoscope. Moreover, it appeared that this procedure was not necessary to confirm the preoperative diagnosis. About eight inches proximal to the ileocecal valve the ileum became markedly constricted and leathery in consistency. Above that point the ileum was distended. The colon was apparently full of solid matter and was ropy in consistency down to the sigmoid flexure where it returned to normal consistency. The appendix was large, free, and normal in appearance. Unques-

tionably the condition was one of polyposis. The abdomen was closed in the usual manner without drainage.

The patient grew rapidly worse and died October 10. The condition at autopsy was as follows. There was about a liter of clear serous fluid in the abdominal cavity. The lower 12 cm of the ileum was moderately and uniformly thickened. The entire colon down to a point 40 cm from the anus was uniformly and diffusely thickened. The mucosa of the colon down to this point and up to the ileocecal valve was of strikingly shaggy appearance because of innumerable polypoid masses measuring on an average 3 cm long and from 3 to 4 mm in diameter. These polypi were either pink or bluish and many were tipped with hemorrhagic areas. The mucosa of the small intestine was normal. In about the center of the descending part of the ileum there was an ulcerated area but the mucosa was smooth. The principal cause of death was intestinal polyposis, the contributing causes were edema of the lungs and bilateral hydrothorax.

CONCLUSION

The pathologic specimen that confirmed the preoperative diagnosis, made possible by the roentgen study and corroborated the surgical observations, is shown in figure 3. The question arises as to whether the polyposis resulted from a bacillary dysentery or whether the dysentery was merely a complication of the polyposis. I am of the opinion that this case was one of polyposis of the colon of the congenital disseminated type, complicated by a bacillary dysentery that confused the picture and postponed the correct diagnosis until too late for relief to be given.

First National Bank Building

TRIPOLI AS A SOURCE OF SILICOSIS

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Tripoli designates a form of silica much used in industry and is a substance possessing peculiar properties which distinguish it from the better known quartz or amorphous silica. The term "tripoli" is itself confusing, since it has been applied to other minerals, such as diatomaceous earth, and special types of limestone. The outstanding sources of tripoli are in southwestern Missouri and southern Illinois. Tripoli is widely described as amorphous, but at least some varieties are crystalline although the crystals are so minute as to warrant the term "cryptocrystalline."

Tripoli, when air dried in lumps is a light, fine textured minutely porous rock. Its lightness and porosity in its native state are believed to result from the fact that it is the siliceous skeleton of a mineral which in earlier days was much more compact, owing to the coexistence of limestone. The action of water throughout the ages has leached out the calcareous portion leaving behind the siliceous framework, hence a common name "rottenstone."

The individual grains of tripoli are approximately 0.0004 inch in diameter. After quarrying drying and pulverizing tripoli is marketed for a great variety of industrial uses including polishes for painted surfaces foundry facings as an ingredient in paint and soaps as a filtering medium and as a rubber filler. As most of the uses of tripoli require minute particles it is reasonable to expect that this material might prove to be a prolific source of silicosis.

Tripoli, however a mineral consisting of more than 99 per cent silica is rarely the source of clinical silicosis. In an earlier period when fallaciously the action of silica in inducing silicosis was attributed to the

cutting action of dust particles the absence of silicosis from tripoli was fully accounted for by the knowledge that tripoli particles are without sharp edges. With the advent of the chemical theory of the action of silica, it became untenable to exculpate tripoli as a source of silicosis because of its surface properties. Lately in court procedures in which silicosis has been falsely attributed to tripoli testimony by qualified industrial hygienists has denied that tripoli may be a source of that disease. The chief basis for this attitude lies in the absence of evidence of characteristic silicosis in the roentgenograms made on workers long employed in industries utilizing tripoli.

In order to determine whether or not tripoli is capable of producing silicosis, this substance was included as one of sixty-three minerals or combinations of minerals injected into the peritoneal cavities of animals. The technic employed essentially was that of Miller and Sayers.¹ One-tenth or two-tenths gram of tripoli in 2 cc of physiologic solution of sodium chloride was

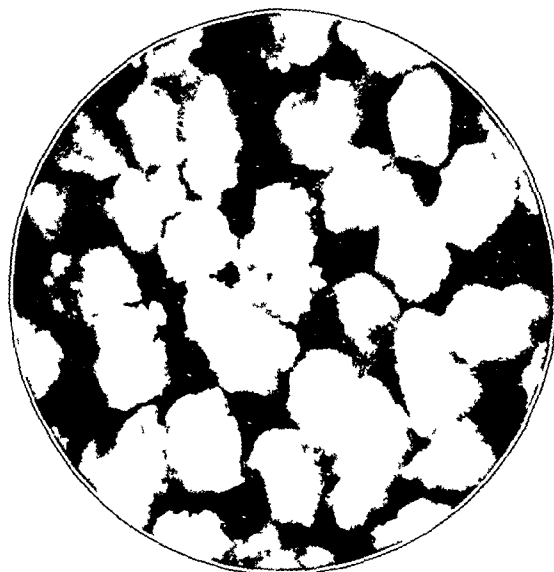


Fig 1—Particles of tripoli suggesting soft spongy formation and absence of sharp cutting edges.

introduced into the peritoneal cavities of male guinea-pigs. The particle size for one specimen tested ranged below 5 microns for another below 42 microns. Twenty-eight other substances, similarly injected, served as suitable controls. The total number of animals employed was in excess of 300.

The chief reactions in the peritoneal cavity following the introduction of mineral substances in fine particles are according to Miller and Sayers, proliferative, inert and absorptive. Silica in quartz and amorphous form, together with minerals possessing a high content of silica, leads to the prompt formation of typical silicotic nodules. The development of proliferative tissue in the peritoneal cavity is presumptive proof that such a dust would be harmful for human beings, under conditions of extensive exposure by inhalation. Other dusts such as iron oxide, silicon carbide, titanium dioxide and aluminum oxide lead to inert reactions such substances merely acting as a foreign body. Other

¹ Miller J. W., Sayers R. R. and Yant W. P. The Response of Peritoneal Tissue to Dusts Introduced as Foreign Bodies. *J. A. M. A.* 103: 907 (Sept. 22) 1934. Sayers R. R., Miller J. W. and Yant W. P. Response of the Peritoneal Tissue to Dusts Introduced as Foreign Bodies. *Am. J. Pub. Health* 25: 452 (April) 1935. Miller J. W. and Sayers R. R. The Physiological Response of the Peritoneal Tissue to Dusts Introduced as Foreign Bodies. *Pub. Health Rep.* 49: 80 (Jan. 19) 1935.

agents such as limestone gypsum silica gel and magnesium carbonate disappear through absorption. These reactions are specific for every individual dust.

At the end of thirty days all tripoli-injected animals were killed together with suitable controls, and inspections were made to determine the type of reaction. In every instance extensive and characteristic proliferation was established as present. The nodules produced were typical of those for quartz silica and in all respects permitted the interpretation that the action of cryptocrystalline silica in the form of tripoli is the stimulation of proliferative responses. In addition to characteristic nodule formation on the anterior abdominal wall as the chief site other nodules were irregularly found on the liver, diaphragm, omentum, intestinal wall, mesentery, testes, epididymis, cremasteric muscle and seminal vesicles. So far as reliance may be placed on this experimental procedure for the gaging of the fibrogenic properties of a dust it is to be recognized that tripoli is similar in its action to other forms of silica.

Notwithstanding the ready demonstration of experimental silicosis from tripoli the fact remains that workers in industry manipulating tripoli are rarely

responses obtained are similar to those produced by quartz or amorphous silica, similarly introduced. The infrequency of clinical silicosis from tripoli as a cause cannot be attributed to any lack of tissue stimulating properties. The electrostatic charge of tripoli particles which tends to the formation of small clumps or masses of this suspended dust, may in some measure contribute to the low order of atmospheric dustiness in tripoli work places, and consequently to the low incidence of silicosis from this substance.

34 West Seventh Street

ENLARGEMENT OF THE LIVER IN DIABETES MELLITUS

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Medical textbooks are brief in their reference to the enlargement of the liver that is now and then found in cases of diabetes mellitus. Friedrich Umbe¹ says: "The liver in diabetic patients ordinarily is enlarged when the disease is of long duration. Whether hyperemia, fat infiltration or incipient cirrhosis is the cause often cannot be settled *intra vitam*." Von Noorden and Isaac² refer to the symptom in the following words: "Doubtless, in many diabetic patients there is a moderate enlargement of the liver. Slight tenderness and increased consistency of the organ is most often demonstrated in these patients." However, von Noorden further states that in 25 per cent of the cases the enlarged liver was accompanied by other signs of circulatory disturbances, and he considers the hard and enlarged liver an accidental complication in diabetes mellitus. Joslin³ makes no mention whatever of enlarged liver as a symptom in diabetes mellitus, but Priscilla White⁴ writing subsequently from the same clinic, reports fatty infiltration of the liver in seven young diabetic patients at autopsy and gives x-ray evidence of the decrease in size of an enlarged liver under treatment.

It has therefore appeared strange to me how often we have found enlargement of the liver in young diabetic patients treated at the Steno Memorial Hospital. In two and a half years forty-four diabetic patients under 20 years of age were treated, and twelve of them had enlargement of the liver. During the same period the hospital also treated 231 diabetic patients over 20 years of age and out of that number one, aged 26, had an enlargement of the liver. These figures are no criterion of the frequency of this symptom, as the hospital preferably admits serious cases of diabetes in young people.

The ages of the thirteen patients, five male and eight female, are given in the accompanying table. No less than ten patients were 15 years of age or under.

All these patients were in a normal state of nutrition, two were shorter than the standard corresponding to their age, but whether this was due to diabetes cannot be decided.

We have attempted unsuccessfully to measure the size of the liver by means of roentgenography and



Fig. 2.—Particles of quartz silica with sharp edges. Neither absence nor presence of sharp edges has any proved connection with the causation of silicosis.

involved and that, when they are affected, the severity of the disease is of low order. No adequate explanation of this can be proffered. In all likelihood no single factor is responsible, but some significance may be attached to the observation that the electrostatic charge of tripoli particles is such that particles tossed into the air tend to agglomerate into small loose clumps or masses and drop to the ground. Because of this property a shovelful of the finest and driest tripoli thrown into the air in an enclosed area falls to the ground with the formation of scarcely any discernible suspended dust. As a consequence, work places in which tripoli is manipulated are relatively free from dust. The electrostatic properties of tripoli particles may serve a highly useful purpose in the avoidance of silicosis in tripoli workers.

SUMMARY

Tripoli, a cryptocrystalline form of silica, readily produces proliferative reactions when injected into the peritoneal cavity of guinea-pigs. In all respects the

From the Steno Memorial Hospital, Copenhagen.
1. Umbe, *Die Zuckerkrankheit und Stoffwechselkrankheiten*, Berlin Urban & Schwarzenberg, 1927.
2. Von Noorden, *Die Zuckerkrankheit und ihre Behandlung*, Berlin Julius Springer, 1927.
3. Joslin, E. P., *Treatment of Diabetes Mellitus*, ed. 4, Philadelphia Lea & Febiger, 1928.
4. White, Priscilla, *Diabetes in Childhood and Adolescence*, Philadelphia Lea & Febiger, 1932, p. 169.

therefore have had to be content to measure how far the liver reached below the costal arch in the medioclavicular line, determined by bimanual palpation with the patient lying on his back. In one patient the liver extended two fingerbreadths below the level of the umbilicus. In five patients it reached the level of the umbilicus. In five it was felt two fingerbreadths below the costal arch. In two the liver was felt a good fingerbreadth below the costal arch.

In all these cases the liver was soft and softer than is usually found in any other form of enlargement of the liver. The surface was smooth and it was rarely possible to palpate a distinct edge. The liver moved freely during respiration and was not tender. In no case did we find an enlarged spleen, ascites or jaundice, or any sign of circulatory insufficiency.

The common feature in all these cases was a severe diabetes which was difficult to control. The disease had been present for from two to eight years with an average of four years and eight months, and had been treated with insulin for from two to seven years, with an average of four years and two months. With one exception all the patients received insulin twice a day and, in regard to their age, in very large doses. The patient who forms the exception had nevertheless,

Ages of Patients with Enlarged Liver

Number of Patients	Age Years
1	6
1	8
1	9
3	12
2	13
1	14
1	15
1	18
1	20
1	26

owing to complications, for a long time received insulin twice a day, recently only once a day.

When a case of diabetes mellitus is admitted to a hospital it is always difficult to procure definite information regarding the condition of the patient prior to admission. To procure these particulars as far as possible, we put the patient during the first two or three days on the same diet and insulin as he has been reported to have had at home. Three of the patients had been on full diet minus sugar at home, the others on a diabetes diet containing from 80 to 200 Gm of bread and in a few cases 50 to 100 Gm of potatoes.

On admission, one patient, owing to infection, had pronounced acidosis (alkali reserve 38.5 volumes per cent of carbon dioxide). None of the others had a pronounced acidosis, as the ammonia values during the first three days varied between 0.50 and 1.20 Gm.

We determined the blood sugar of these patients fasting at 7 a. m., and at 11 a. m., 2 p. m., 5 p. m. and 10 p. m. Of the thirteen none had fasting blood sugar values below 300 mg per hundred cubic centimeters during the first three days of observation. The blood sugar values in the other analyses during the day usually were from 50 to 150 mg per hundred cubic centimeters. There was considerable glycosuria as a consequence of hyperglycemia in the morning hours.

During the hospital treatment the enlargement of the liver disappeared. How long it took for each of the thirteen patients we are unable to say. If the enlargement was slight we kept the patient only until the diabetes was well controlled, regardless of whether

the enlargement of the liver was still present. If the enlargement was considerable, we kept the patient, if possible, until the liver could no longer be palpated.

In the case in which the liver was largest it was ten weeks before the enlargement disappeared. In respect of three of the patients whose liver extended to the level of the umbilicus it took six, fifteen and seventeen weeks respectively for the enlargement to disappear entirely. In a fourth case in which there was as great an enlargement the liver was one fingerbreadth below the costal arch when the patient left the hospital after three weeks' treatment.

In the hospital all the patients were treated with a diet relatively poor in carbohydrates, containing 100 Gm of bread, 100 Gm of fruit and greens poor in carbohydrates and, in addition, fats sufficient for the calculated standard metabolism plus 50 per cent. With this diet and ordinary insulin twice daily it was not possible to avert the heavy fluctuations in the blood sugar values in the course of the day. All these patients were therefore treated with protamine insulinate. With this treatment the glycosuria is insignificant and the ammonia values are normal. In many of these patients, however, it was impossible to get Legal's test negative in the urine.

The tests of hepatic function that can be employed in the case of diabetes are of limited value as regards these thirteen patients. We observed the patients only in the period when the enlargement was subsiding, not in the period when it was developing. In five of the patients (including the two with the greatest enlargement) repeated determinations were made of the urobilin quantity in the twenty-four hour urine by means of Schlesinger's test. No pathologic urobilinuria was found, the concentration having been 1/10 at the highest. Hay's test revealed no choleic acid. Jaundice was not observed, and the color of the serum according to Meulengracht was under 5 in three of the patients with the greatest liver enlargement. The sedimentation rate of the erythrocytes and hemoglobin quantity in the blood were normal in all the patients.

In these patients one may presume that the liver was enlarged as a consequence of fat infiltration. The pathologic-anatomic description of a fat-infiltrated liver exactly accords with the physical conditions associated with this enlargement of the liver. That the enlargement can disappear so quickly is also an argument in favor of this assumption. Neither the physical conditions nor the clinical examination render it probable that the enlargement has been induced by a cirrhotic liver, a congestion of the liver or a glycogenous liver. We consider that this enlargement of the liver in diabetes mellitus is induced directly by the abnormal diabetic metabolism and that it cannot be regarded as an accidental complication. We have treated many young people with diabetes just as severe as in these thirteen patients without finding any enlargement of the liver, and clinically we cannot find any reason why this enlargement occurs only in some of the young patients with severe diabetes.

It would at first be natural to regard this enlargement of the liver as a link in the chain of symptoms so exactly described by Geelmuyden⁶ in dealing with various disturbances in the carbohydrate metabolism. The three principal links are fat migration, fat liver and ketonuria. The last is a constant symptom in these

⁵ Hagedorn H. C., Jensen B. N., Krarup N. B. and Wodstrup I. Protamine Insulinate. *J. A. M. A.* 106: 177 (Jan. 18) 1936.
⁶ Geelmuyden H. C. Ueber Fettwanderung. *Acta med. Scandinav.* 54: 5 (Nov.) 1920.

disorders, and, as it was not found in these patients prior to admission to the hospital, the enlargement of the liver cannot be regarded as a link in this chain of symptoms

Clinical Notes, Suggestions and New Instruments

ARGYRIA BECOMING MANIFEST IN PREGNANCY

JOHN RAAP MD
Fellow in Surgery the Mayo Foundation
AND
HOWARD K. GRAY MD
ROCHESTER MINN

Since Angelus Sala in 1647 first reported a case of argyria accounts of a similar nature have been by no means uncommon. However, a case in which argyria seemed to become manifest because of pregnancy presented a problem in physiochemistry worthy of consideration and report.

A woman, aged 47, admitted to the clinic Aug 23, 1935, complained of gas on the stomach, abdominal distention, and discomfort in the right upper quadrant of the abdomen. It was found that she had gallstones; subsequently cholecystectomy was performed and was followed by uneventful convalescence.

The features in this case that we wish to consider were in no way related to the diseased gallbladder. Although the patient made no complaint of the peculiar color of her skin, we were immediately struck by the condition. On inquiry, she gave the following story:

Fifteen years before, she had undergone tonsillectomy. Following the tonsillectomy she had sprayed her throat with mild protein silver and since her physician had told her that it would do no harm, she had continued the use of the spray twice a day for almost five years. Near the end of this five-year period she had gradually discontinued the practice, so that for six months prior to the beginning of a pregnancy, nine and a half years before, she had not used it. In the first month of pregnancy she began to notice a bluish discoloration around the nose, and this discoloration gradually spread over the entire body. Within one month after the onset the peculiar discoloration had become intense and it had remained about the same for the last nine and a half years, although the woman never had resumed medication with mild protein silver. The pregnancy was without incident except that morning vomiting was unusually severe. The woman gave birth to a normal baby, whose skin has never shown any trace of the bluish discoloration.

On physical examination it was easy to make the diagnosis of argyria. The skin over the woman's face and neck was a dusky, bluish gray, the upper extremities including the finger nails, were also a dusky blue, and the thorax and to a lesser degree, the lower extremities were discolored. She presented somewhat the appearance of a deeply cyanosed patient. The sclerae were clear and there was practically no discoloration of the gums. When the cholecystectomy was performed, it was found that the stomach and intestine were likewise colored a bluish gray. Microscopic examination of the gallbladder and appendix, which were removed at operation disclosed silver granules in the tissues, and on chemical analysis it was found that there was 0.3 mg of silver in 4 Gm of gallbladder. Thus, the diagnosis of argyria was confirmed.

This case presented an interesting problem in physiochemistry. The usual history in silver poisoning is that the discoloration of the skin gradually becomes manifest. Zacks¹ reported a case in which the argyrosis came on suddenly following exposure to ultraviolet rays from a lamp, but rapid discoloration of the skin is not generally the rule. In our case the question arises as to why the discoloration developed rapidly, early in pregnancy, six months after discontinuance of the medication with mild protein silver. It is also of interest that the baby escaped the argyrosis.

Much less is known of the pathology and chemistry of argyria than of the symptoms. It is common knowledge that colloids

do not usually diffuse through animal membranes, therefore in colloidal silver solutions the silver ions must be freed before they can enter the tissue fluids. Once liberated, the silver ion forms complex, but soluble, compounds of silver in the intercellular tissue fluids. According to Scheffel,² when the silver laden tissue fluids reach the intracellular substances colloidal compounds of silver may again be formed which go through chemical alterations in which the silver ion is once more split off. If a definite balance can be maintained between silver in the tissue fluids, particularly the intracellular elements, and their final deposition, deposits of silver, or argyria, can be avoided. Scheffel however, wrote "It is conceivable that a great many physical as well as chemical alterations may take place within the cellular elements which may entirely prevent the association from the cell of silver ions. What may occur to prevent the silver ion from leaving the tissue cells?"

If a state of partial dehydration or a state of alkalinity should exist the intracellular ionic silver either could not at all leave the cells or its normal exit may be considerably retarded—thus leaving an intracellular disposition for the subsequent formation of macroscopic symptoms of argyria."

This explanation of the physiochemistry of argyria may answer the question why the discoloration occurred rather suddenly in our case early in pregnancy. Prior to pregnancy there was probably a balance of the intake and outgo of silver within the cells. In the course of pregnancy the patient vomited a great deal and this may have resulted in mild dehydration, which prevented the intracellular ionic silver from leaving the cells. It seems rather certain that a disturbance of metabolism of some sort attributable to pregnancy, must have been responsible for the appearance of the argyria. This supports Scheffel's contention that argyria may be prevented in most cases by careful attention to the patient's metabolism of water and chloride.

CARDIOVASCULAR AND PERIPHERAL VASCULAR DISEASES

TREATMENT BY A MOTORIZED OSCILLATING BED

C. E. SANDERS MD KANSAS CITY KANSAS

It has long been known that improvement in peripheral blood circulation and cardiac efficiency can be obtained by certain postural changes, utilizing the effects of gravity to facilitate improved blood flow and tissue fluid exchange. This has been accomplished by elevation of the extremities, changing the position of the trunk and the application of elastic pressure over



Fig 1 Oscillating motorized bed adjusted so that the excursion of the bed will be an approximately equal 13 inch drop of each end alternately. Two speeds are available three and one half or seven and one-half minutes from low foot to high foot and return.

the more distant portions of the circulatory tree. The means adopted to accomplish these ends have included attachments to the ordinary hospital bed specially designed chairs or mechanical arrangements in which centrifugal force can be used and, in addition, certain negative and positive air pressure machines.

From the Division of Surgery the Mayo Clinic
1 Zacks M A Argyria in a Child Following Intranasal Use of Argrol Laryngoscope 43: 680-686 (Aug.) 1933

2 Scheffel Carl The Physiochemistry of Argyria M Rec 140: 205-207 (Aug 15) 1934

My interest in the problems of peripheral edema dates back several years. I observed that elderly patients with fractures of the lower extremities necessitating immobilization for several months developed edema that persisted for unduly long periods of time. Following the institution of postural changes in these cases, wherein the vessels were completely emptied by elevation

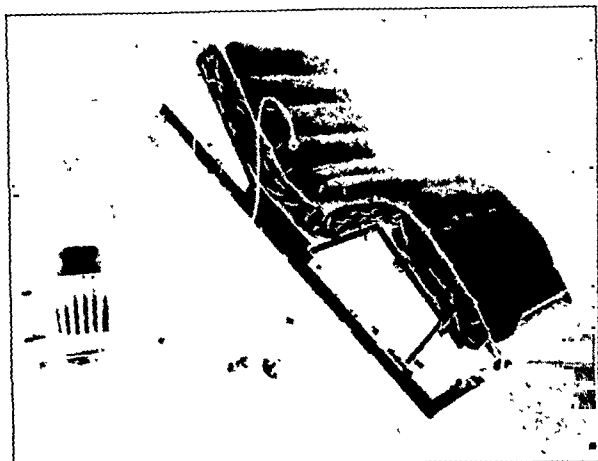


Fig 2—Adjustment for failing compensation with edema of extremities and lungs. When thus set the bed has the extent of excursion shown in this illustration and in figure 3. With the back elevated the patient rarely suffers from dyspnea. With the crank adjustment at the foot of the bed the excursion can be set for any degree of low head position desired as the patient improves.

and completely filled by lowering, the edema would rapidly disappear. Similar postural changes regularly instituted were tried on patients suffering from cardiac edema, with surprisingly good results. The accomplishment of these postural changes in cases of cardiac insufficiency could be obtained only through active movements, inconvenient and exhausting to the patient.

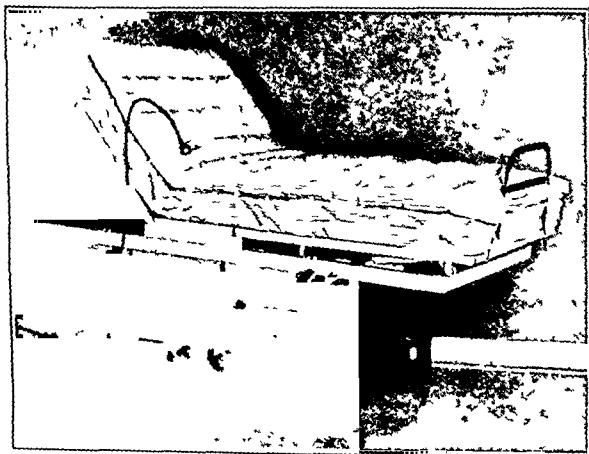


Fig 3—Adjustment for failing compensation with edema of extremities and lungs. Compare with figure 2. Note that the frame does not go lower than level.

This bed has been made and introduced as a convenient and comfortable method of accomplishing these postural changes regularly and systematically, as well as passively on the part of the patients, who remain in a state of relaxation in bed with complete conservation of their energy.

Patients actually enjoy the continuous alteration of posture with its changing distribution of body weight against the bed. Peculiarly enough, patients suffering from myocardial insufficiency with pulmonary edema tolerate the excursions of the bed without pronounced dyspnea.

I have concluded from observation and treatment of a number of patients that by utilizing gravity completely to empty and fill the veins and capillaries intermittently and regularly, it has a beneficial effect in many cardiovascular and peripheral vascular diseases. Unquestionably, filling and emptying the

veins and capillaries at regular intervals represents a type of vascular gymnastics which restores their muscle tone.

Clinical improvement of patients treated on this oscillating bed for congestive heart failure with resultant disturbance in distribution of tissue fluid manifests itself in two ways: (a) by utilizing gravity to facilitate the return flow of blood to the heart, subsequently restoring lost muscle tone, and (b) by improvement in cardiac function. Physiologically, the so-called law of the heart may explain this fact. This law, in brief, states that a rapid inflow of blood with thorough distention of the heart chambers results in a full force contraction while a slow inflow with imperfect filling results in a weak contraction.

In peripheral vascular diseases of diabetic, arteriosclerotic or thrombo-angitic types treated on this bed marked improvement in local circulation is noted. This is indicated by a definite improvement in the temperature of the affected part as well as relief of pain. It is also noted that ulcers heal and the progress of gangrene is stopped.

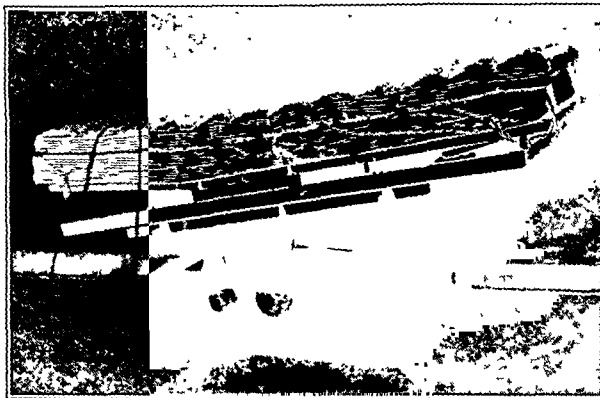


Fig 4—For postoperative treatment hip fracture and similar conditions. This illustration and figure 5 show the toggle attachment which reduces the cycle from approximately 26 inches to one of 10 inches. The advantage in this attachment is a level mattress as the excursion is so slight that the patient does not slide and no elevation of knees or head is necessary. This cycle cannot be altered with telescopic pitman.

Physiologically, the improvement is due to two factors: (a) relief of venous stasis and back pressure, and (b) intravessel aspiration, promoting better arterial blood supply.

I realize that there are other factors outside the circulatory tree which influence the distribution of tissue fluid and its

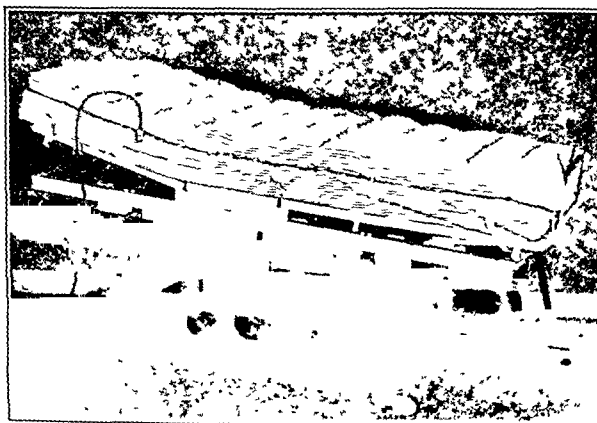


Fig 5—For postoperative treatment hip fracture and similar conditions. Compare with figure 4.

constituents resulting in abnormal collections of tissue fluid, which are not amenable to improvement of the circulatory state but necessitate other therapeutic principles not within the realm of this presentation.

The device herein presented provides a means of applying the principles of gravity to the actual treatment of patients in a convenient and comfortable manner. In brief it is a motorized hospital bed with two speeds, which alternately elevates and lowers the head and the foot. The amplitude and rate of

oscillation are adjustable in a simple manner. The motor control button is placed near the patient so that he or the attendant can interrupt the excursion at any desired position.

I am convinced, from a study of results obtained through the utilization of gravity in the treatment of a number of patients with myocardial insufficiency during the past three years, that improvement is more certain and rapid than that which can be obtained through the use of the more conventional methods, also that when compensation and vascular tone have been restored, the improvement is more permanent. It is not implied that the cardiac patient must resign himself to this continuous treatment after restoration of vascular and cardiac tone. Studies are being made in several institutions to determine the applicability of this method of treatment in a wide variety of cases.

MECHANICAL CONSIDERATION OF THE BED

The frame of the bed is substantially constructed of cast iron and consists of two segmental side members, which are securely braced by the tube and tie-rod method. The frame is mounted on rubber-tired casters, which assure quick, easy and noiseless movement about the room. Attached to the spring portion of the bed are two horizontal racks, which engage the teeth of the segments of the frame thus admitting a free, smooth and quiet movement in the operation of the bed.

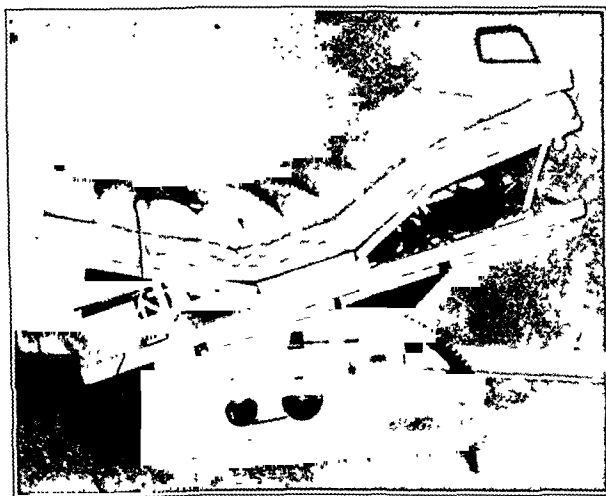


Fig 6—For peripheral vascular diseases. The telescopic pitman is adjusted with crank and set so that the cycle of low foot and high foot will be equal.

The power plant consists of a specially constructed ball bearing worm type gear case with a speed reduction of approximately 6,000 to 1. It is driven by a one-third horse power motor with V belt and pulley drive. The motor, in addition to its cushioned base construction, is mounted on a spring steel plate which causes it to float reducing vibration and insuring reasonably quiet operation.

A pair of disks, one at each side of the transmission case having wrist pins which engage the lower ends of the pitman furnish the driving force which propels the spring portion of the bed. The pitman, which is of the telescopic type, is attached to a cross member at the foot of the spring portion of the bed and may be lengthened or shortened by a simple screw adjustment operated by a crank at the foot of the bed.

For an extremely short cycle in the movement of the spring portion a separate toggle attachment is provided which may be attached in a few minutes allowing the bed to operate continuously throughout the day or night without back rest or knee elevations. The drop of either end of it is so slight that the patient does not slide on the mattress. One crank answers for the adjustment of the head or lower extremity elevations as well as for the operation of the telescopic pitman, which produces a greater or lesser cycle of movement of the spring portion of the bed. Three and one half minutes is required for one complete cycle from low to high point and return. The patient or attendant may stop this cycle at will in any desired position.

1401 Southwest Boulevard

FULCRUM FOR BONE FORCEPS

(AN INSTRUMENT TO BE USED IN CONJUNCTION WITH LION JAW FORCEPS)

HAROLD LUSSKIN M.D., NEW YORK

Most surgeons have had occasion to use profanity when trying to approximate overriding ends of fractured long bones even when these ends are exposed to view through an incision. Traction with the patient on the operating table seems insufficient and uncontrolled as to both force and direction. Besides, even though the ends of the fragments are held in the grasp



Fig 1—Pipe fulcrum made of a piece of $1\frac{1}{2}$ inch pipe or metal tube to which two loops of brass are fastened. The pipe can be made of brass and the loops welded on. The loops here are held in place by nuts within the pipe.

of the lion-jaw forceps, to pull them down and place them end to end is extremely difficult, sometimes impossible.

It was this difficulty which prompted the construction of a simple device illustrated here. It is easy of manufacture. It acts as a fulcrum for the lion-jaw forceps.

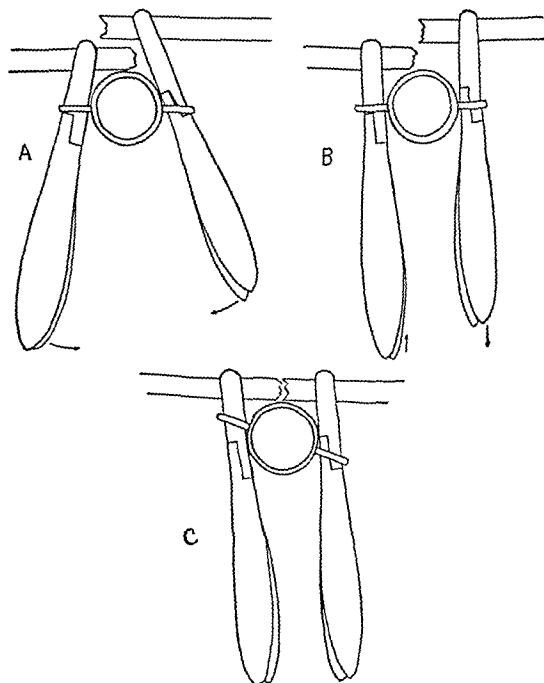


Fig 2—A each lion-jaw forceps is passed through a loop in the pipe fulcrum and the fragments of the fractured bone are grasped. The handles of the forceps are approximated as shown by the arrows. B with the handles approximated the bone ends are brought into one plane correcting the overriding. The handles are then moved in the directions indicated by the arrows on the fulcrum causing it to rotate until the bone ends are in alignment. C the bone ends are now in alignment. The pipe fulcrum is shown in its rotated position. The bone ends can now be brought together and held by an assistant until they are secured in place.

The instrument (fig 1) consists of a piece of pipe $1\frac{1}{2}$ inches in diameter and 2 inches long. On opposite sides of this pipe are placed metal loops big enough to permit lion-jaw forceps

to slip through. The forceps are passed through these loops and the bone fragments grasped. The handles of the forceps are approximated, the pipe acting as a fulcrum between them, and the fragments brought into alignment (fig 2)

41 West Seventieth Street

LYMPHOGRANULOMA INGUINALE ITS INCIDENCE IN ST LOUIS

S H GRAY M D GEORGE A HUNT PH D PAUL WHEELER M D
AND J OWEN BLACHE M D ST LOUIS

For many years, cases of lymphogranuloma inguinale have been reported individually or in small groups under a variety of more or less descriptive names. The literature on this subject has been completely reviewed by Stannus¹ in his recent book and need not be dealt with here. With the advent of the Frei test² and its rather widespread use and acceptance, the clinical and public health importance of this disease is only just beginning to be appreciated. The only large series reported in this country is that of DeWolf and Van Cleave,³ who found fifty-eight positive cases in 1,010 persons tested with the Frei antigen. In St Louis the first case was described in 1933 by Ives and Katz.⁴ In 1935 Rainey and Cole⁵ reported twenty-three cases.

In our studies we have tested out, by means of the Frei reaction, the incidence of lymphogranuloma inguinale in the white hospital population at City Hospital No. 1, in the colored hospital population at City Hospital No. 2, and among the prostitutes appearing at the Municipal Venereal Clinic.⁶

The antigens were prepared from colored and white patients according to the directions given by Frei. The pus aspirated from an inguinal node of a patient with a strongly positive Frei reaction was diluted five times with 0.85 per cent saline solution, and heated at 60 C. for two hours the first day and one hour the second day. The product was then tested for sterility by bacterial culture and for activity by intradermal injection of known positive cases of lymphogranuloma inguinale. The patients from whom the pus was obtained for use as Frei anti-

ground by shaking with sterile glass beads in approximately five volumes of sterile saline solution.

The antigens used differed in two respects from those used by DeWolf and Van Cleave. Our own antigens were 1:5 pus dilutions (recommended by Frei) rather than 1:10. They contained no preservative, whereas those of the Cleveland investigators contained 0.25 per cent phenol. We refrained from adding any preservative, because we had done no work on the effect of disinfectants on the activity of the antigens. Hence we have used care in handling the antigens and have relied on frequent culture of the material as a check on the sterility of the product. Our antigens have remained active for at least nine months.

Each antigen prepared was used on colored and white patients. The marked difference in the response of these two groups acted as a further check on the antigen.

TABLE 2—Results of Tests in Series 1

	Number of Cases	Frei Negative	Frei Positive	Clinically Active	Clinically Inactive
Male	106	66	40 (38%)	20	15
Female	103	49	54 (52%)	13	41

TABLE 3—Results of Tests in Series 2

	Number of Cases	Frei Negative	Frei Positive	Percentage of Positive Cases
Male	92	52	40	43
Female	172	114	58	34

In table 1, we have summarized the results of our study. The preponderance of this disease in the colored race is outstanding. The white persons in our group come from the lowest economic level. This group would be expected to exhibit the greatest percentage of so-called social disease in their race. By consulting the ratio of positive Kahn reactions in the white and colored groups, the relative proportions of the occurrence of lymphogranuloma inguinale become even more striking. Just what factors aside from race susceptibility are involved it is difficult to say. The difference in economic and hygienic standing is too slight to account for a 10:1 ratio. Though most of the white males with clinical lymphogranuloma inguinale gave a history of sexual contacts with colored women, the lack of control figures prevents us from emphasizing anything on this point. Those who have interested themselves in this subject say that interracial sexual relationships are fairly common in this and southern regions.

In the prostitutes we made no attempt to study the presence of active manifestations of lymphogranuloma inguinale, nor did we delve into their histories to determine clinical activity in the past. The Frei tests on the white patients were performed at a time when no clinically active cases were present in the wards of the City Hospital. The Frei tests on the colored patients were performed in two series. In series 1 (table 2), many active cases were in the hospital at the time of study. The clinical features of these cases together with many others will be reported later. The patients for series 1 were derived mostly from the genito-urinary and gynecologic wards. It is interesting that the figures in this table include thirty-five patients suffering from tuberculosis. Only two were Frei positive (5.8 per cent). There was no difference in the range of the age of this group as compared to the others. Evidently the chronicity of and debility produced by tuberculosis greatly diminished the opportunity for sexual contacts. These results, in a way tend to confirm the accuracy of the Frei test and they attest the accuracy of the antigens used.

In the second series (table 3), patients in the medical wards were used exclusively. No known clinically active cases were present at the time.

We were greatly surprised to find a history of a previous active lesion missing in most of the patients who gave a positive Frei reaction and had no active lesion at the time. Our tendency was to attribute this to the ignorance of the patients. The evanescence of the primary lesion and the infrequency of

TABLE 1—Results

	Number of Cases	Number of Positive Frei	Percent of Positive Frei	Percentage Positive Kahn Wassermann Reaction	
				Frei Positive Group	Frei Negative Group
White male	51	2	3.4	0	15.1
White female	68	2			
Colored male	198	80	40	40	33
Colored female	210	112	40	26	26
Prostitutes, white	68	3	4.4		
Prostitutes colored	130	62	47.7		

gen were free from tuberculous, gonorrheal, chancroidal⁷ and syphilitic infections, and the pus was free from blood.

In several instances when fluctuation did not occur, successful antigens were prepared from the excised nodes. They were

From the Snodgrass Laboratory, City Hospitals, Department of Public Welfare, City of St. Louis, and the Laboratory of the Jewish Hospital.
1 Stannus H S. The Sixth Venereal Disease. Baltimore: William Wood & Co. 1933.

2 Frei Walter. Eine neue Hautreaktion bei Lymphogranuloma inguinale. Klin. Wochenschr. 4: 2148 (Nov. 5) 1935.

3 DeWolf H F and Van Cleave J V. Lymphogranuloma Inguinale. J. A. M. A. 99: 1065 (Sept. 24) 1932.

4 Ives George and Katz S D. Lymphogranuloma Inguinale (Chlamydia Bubis). J. Missouri M. A. 30: 107 (May) 1933.

5 Rainey Warren and Cole W H. Lymphogranuloma Inguinale. Its Relation to Structure of the Rectum. Arch. Surg. 30: 820 (May) 1935.

6 We are indebted to Dr. Bredeck, health commissioner, and to Dr. Kavanaugh, director of the Municipal Venereal Clinic, for permission to test this group.

7 At the present time a commercial supply of a killed suspension of Ducrey bacillus (dimelcos vaccine) is not available in the United States for therapy or for diagnosis of chancroidal infection by a skin sensitivity test. Our first supply was obtained through the kindness of May and Baker Ltd., London. The organism has been difficult to obtain in pure culture free from pus or blood. Recently one of us has described a method of cultivating the Ducrey bacillus for the preparation of a saline suspension (Hunt C A. The Cultivation of the Ducrey Bacillus for the Preparation of Vaccine. Proc. Soc. Exper. Biol. & Med. 33: 293 (Nov.) 1933). We are now using our own vaccine for the differential diagnosis of chancroid.

like the distal cuff throughout the negative phase, plays no part in the closed system. In this manner each cuff functions through the same phase of each cycle to its best mechanical advantage, the distal through the positive, and the proximal through the negative. One cuff is not required to be resistant to both positive and negative pressures but merely to work efficiently throughout one phase of the cycle.

This combination of cuffs in my hands, has proved entirely satisfactory, and we feel that its use with the passive vascular exercise unit will increase the efficiency of an extremely valuable therapeutic aid.

Greenspring Avenue and Forty-First Street

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS

HOWARD A. CARTER Secretary

McINTOSH JUNIOR METRO-COAGULATOR ACCEPTABLE

Manufacturer McIntosh Electrical Corporation, Chicago

This unit is recommended by the manufacturer to members of the profession who require a high frequency current generator solely for electrocoagulation and electrodesiccation. The firm informs the Council that this unit is not intended for medical diathermy.

The machine was operated for a period of one hour, and the resulting temperature rise of the transformer was within the limits of safety established by the Council. Other electrical parts were inspected and found to be safe and serviceable. The manufacturer states that a d'Arsonval solenoid is employed to generate the high frequency d'Arsonval current. The spark gap is of 8 point (four gap) air-cooled type. Figure 2 is a diagram of the connections. The apparatus is enclosed in a leatheret-covered carrying case and weighs about 18 pounds. The fittings of the unit are chrome plated.

In a clinic acceptable to the Council the machine was given a practical test over a period of several months. The investi-

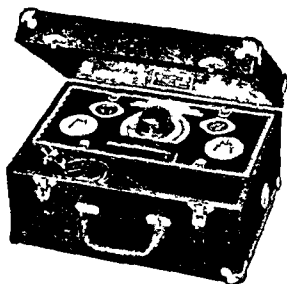


Fig. 1—McIntosh Junior Metro Coagulator

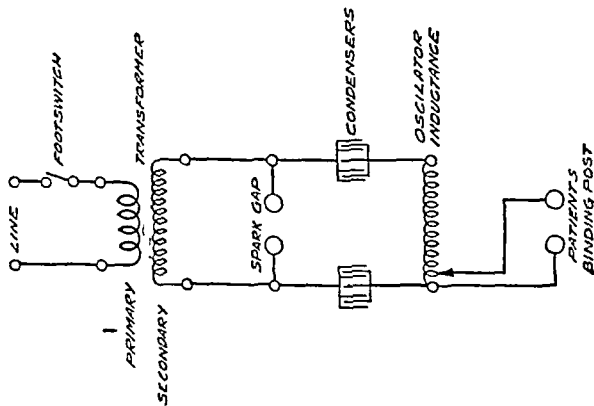


Fig. 2—Diagram of connections

gator reported that the apparatus will perform satisfactorily for the purposes for which it is recommended and that it has been used with success for both light desiccation and coagulation of tissues.

The Council on Physical Therapy voted to include the McIntosh Junior Metro Coagulator in its list of accepted apparatus.

LEPEL DIATHERMY MACHINE ACCEPTABLE (TYPE RFC)

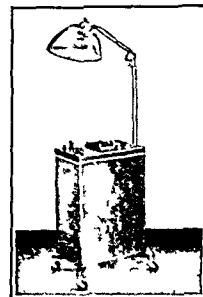
Manufacturer Lepel High Frequency Laboratories, Inc., New York

This machine is of the conventional type diathermy unit and is recommended for surgical and medical diathermy. It makes use of the spark gap for creating a high frequency energy.

The manufacturer submitted data containing a report of tests of the unit for power input and output, and for its spark gap and transformer temperature rise. The results recorded in the data were in agreement with the observations of the Council's investigator and in conformity with the Council's standards for diathermy machines. The circuit of this machine is similar to that of the Lepel High Frequency Combination Machine already accepted by the Council.

This machine was used in a clinic acceptable to the Council for several months. It proved to be satisfactory, both as a medical diathermy machine and as a surgical unit.

The Council therefore voted to include the Lepel Diathermy Machine, Type RFC, in its list of accepted apparatus.

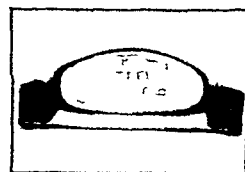


Lepel diathermy machine type RFC

ALTHERM SINUS PAD ACCEPTABLE

Manufacturer Wagenseil Surgical Appliance Company, Inc., Brooklyn

This heating pad is recommended by the manufacturer as a convenient method of applying heat where heat is required. It is constructed of heavy gage rubber, the bottom or face side being shaped for application to the forehead with a detachable rubber band for holding the pad to the head. The pad is about $3\frac{3}{4}$ by $1\frac{3}{4}$ inches in size and weighs about 8 ounces.



Altherm sinus pad

The manufacturer claims that the mixture (heat retaining element) used in the pad is nonirritating and noninflammable. After the pad has been boiled for a short time, the contents liquefy. After being removed from boiling water and in ordinary room temperature, the mixture gradually recrystallizes as it gives off heat. The action makes use of the latent heat of crystallization. The contents do not need to be renewed.

The total weight of the thermophoric mixture amounts to about 6 ounces avoirdupois, or approximately 148 Gm of which the component parts are:

Sodium acetate	90.5%	135.1 Gm
Glycerin	3%	4.5 Gm
Sodium sulfate crystal	2%	3.0 Gm
Sodium sulfate anhydrous	4.5%	6.7 Gm
	100%	149.3 Gm

The pad is prepared for therapeutic use by placing it in boiling water and boiling it for not more than ten minutes. After this, the element will be found to be partially liquefied and during recrystallization will give off heat at a comparatively even temperature for approximately one hour, after which the element will have solidified completely. The temperature will range from approximately 114 F down to approximately 108 F.

The pad cannot be used until boiled, so it is necessarily sterilized before each application.

An investigator tested the pad for the Council in a recognized clinic. He reported that the pad might have value in certain types of frontal sinusitis in which heat is indicated as a therapeutic measure.

Because the pad is considered simple, safe and clinically effective, the Council on Physical Therapy voted to include the Altherm Sinus Pad in its list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING
REPORT

PAUL NICHOLAS LEECH Secretary

PHAGOID-STAPHYLOCOCCUS, PHAGOID-BACILLUS COLON, PHAGOID-STREPTOCOCCUS HEMOLYTICUS AND OTHER BACTERIOPHAGE PREPARATIONS OF THE PHAGOID LABORATORIES, INC, NOT ACCEPTABLE FOR N N R

In 1934 the Council sponsored an exhaustive report on bacteriophage therapy by Eaton and Bayne-Jones (*THE JOURNAL*, Dec 8, 1934, p 1769, Dec 15, p 1853, Dec 22, p 1934) in which it was brought out that in view of the present status of knowledge concerning bacteriophage preparations, none of these products could be accepted for inclusion in New and Nonofficial Remedies. At that time the Council considered the merits of individual commercial preparations among them a line of products marketed by the Allen-Sandlin Laboratories, Inc, of Louisville. At about that time the Allen-Sandlin Laboratories, Inc, went into bankruptcy and the business was taken over by the Phagoid Laboratories, Inc. The latter concern formally presented for the Council's consideration Phagoid-Staphylococcus, Phagoid-Bacillus Colon and Phagoid-Streptococcus Hemolyticus. In presenting these products the firm expressed a desire to market them in such a way as to obviate the numerous objections raised by the Council in its consideration of the Allen-Sandlin products.

The advertising submitted by the Phagoid Laboratories, Inc, is open to the same objection as was found in that of the Allen-Sandlin Laboratories, namely, that it represents a mixture of some rational and some justifiable statements with numerous unwarranted therapeutic claims, especially as regards the specificity of certain products. In general, the material is overenthusiastic and uncritical. There is so much of this sort of thing that the Council feels it unnecessary to go into detailed discussion of this advertising.

Although it has formally presented for the Council's consideration only the products just enumerated, the Phagoid Laboratories, Inc, has sent advertising matter for others of its "Phagoid" preparations. In the list given in the general booklet *Phagoid, Lysed Bacteria with their Antivirus with the Specific Lysins* apparently a complete list is given, as follows: Phagoid-Arthritis, Phagoid-Mucous Colitis, Phagoid Catarrhal Mixture, Phagoid-Bacterial Endocarditis, Phagoid-Typhoid, Phagoid-Pruritus, Phagoid-Mixed Infection, Phagoid-Pneumococcus Polyvalent, Phagoid-Gonococcus, Phagoid-Pertussis, Phagoid-Streptococcus, Phagoid-Staphylococcus, Phagoid-Bacillus Colon and Phagoid-Autogenous.

The Council found the following objections to the nomenclature used for these products:

USE OF THE NAME PHAGOID

Regardless of whether used as a proprietary name or as a generic term to apply to all products manufactured by the firm, the term Phagoid seems unfortunate and inappropriate. Literally the term means like, resembling or having the form of a "phage." The products under consideration are said to be mixtures of bacteriophage, lysate and antivirus. The term Phagoid is not only not descriptive of this mixture but conveys an erroneous idea as to its nature, certainly it should not be used as a designation for individual products as it is used in the advertising literature of the Phagoid Laboratories. The use of the term antivirus is regarded as also unfortunate although it seems to be fairly well established in scientific literature and is also used by Besredka as a name for the hypothetical substances in filtrates which specifically inhibit the growth of bacteria and produce rapid local immunization.

USE OF CLINICAL NAMES

The use of clinical names in connection with the use of various Phagoid products, especially when these names indicate conditions of diverse etiology, is highly objectionable, for example, Phagoid-arthritis, -mucous colitis, -catarrhal mixture, -bacterial endocarditis, -pruritus, -mixed infection.

It is doubted whether a potent bacteriophage has been found for the gonococcus or the pertussis bacillus. Phagoid streptococcus is entirely too general a term and, in fact, so is Phagoid hemolytic streptococcus.

Since there are a great many different strains of hemolytic streptococci, nonpathogenic, pathogenic and specific for different diseases differing in antigenic structure as well as in cultural characteristics, relatively few of the hemolytic streptococci have been shown to be sensitive to bacteriophage.

The claim for usefulness of Phagoid-mucous colitis is based on the assumption that Bagen's streptococcus or diplococcus is the cause of this condition. This assumption is not well founded and in fact Bagen's organism has not been shown to be a specific entity distinguishable from other streptococci that may be found in the colon.

In view of the exhaustive report on bacteriophage therapy referred to at the beginning of this report, the Council would not be warranted at this time in the acceptance of any bacteriophage preparations for inclusion in New and Nonofficial Remedies. Certainly, the products of the Phagoid Laboratories, Inc, as now marketed, are quite unacceptable. Other objections of the Council to these products may be discussed under the following headings:

BACTERIOPHAGE PREPARATIONS EXPERIMENTAL

The conflicting results reported in the literature regarding the usefulness of bacteriophage preparations clearly indicate that for most of the conditions mentioned in the list of Phagoid products bacteriophage preparations must be regarded as in the experimental stage.

SPECIFICITY OF BACTERIOPHAGE

It is known that although bacteriophages may show considerable latitude in their activity toward different races or even different species of bacteria they often show a very narrow specificity in acting on only certain strains of bacteria within a single species. For this reason it would be necessary to check the action of any particular bacteriophage not only against the strains of bacteria used in its preparation but also against other strains of the same species if a stock preparation of bacteriophage is to be regarded of use in any infection. On the other hand, the listing of Phagoid autogenous might indicate that the Phagoid Laboratories is prepared to make an autogenous Phagoid from any culture with material submitted. The firm's ability to do this is regarded as a very doubtful possibility. When this report was sent to the firm, it replied concerning this statement: "It has never been stated or inferred that the Phagoid Laboratories were prepared to make an autogenous vaccine from any culture with material submitted." It is pointed out that the statement in question was made on the basis of the following, which appeared in one of the circulars submitted by the firm:

The Laboratory will furnish swabs packaged in suitable medium for mailing and will prepare autogenous Phagoid from the organisms submitted.

The Council declared the bacteriophage preparations of the Phagoid Laboratories, Inc, unacceptable for inclusion in New and Nonofficial Remedies because they are offered to the medical profession with unscientific, unwarranted claims, thus encouraging physicians to use in a routine way medicaments the therapeutic value of which has not been established, and because they conflict with other rules of the Council.

When a statement of the Council's consideration was sent the Phagoid Laboratories, Inc, the firm replied expressing its intention to revise drastically its claims and literature in accord therewith. The firm made some minor objections which have been taken into account in preparation of the foregoing statement. The firm's letter, however, offered no basis for modification of the Council's essential reason for rejection of these

products, namely, that there is not sufficient evidence to warrant their inclusion in New and Nonofficial Remedies. The Council therefore reaffirmed its rejection of Phagoid-Staphylococcus, Phagoid-Bacillus Colon, Phagoid Streptococcus Hemolyticus and other bacteriophage preparations of the Phagoid Laboratories, Inc, for this reason and in order that the medical profession might be informed, authorized publication of this report of its consideration

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



FRANKLIN C. BING, Secretary

- 1 DOLE BRAND HAWAIIAN PINEAPPLE SLICES, WATER PACKED
- 2 DOLE BRAND HAWAIIAN PINEAPPLE TIDBITS, WATER PACKED

Manufacturer—Hawaiian Pineapple Company, San Francisco

Description—1 Canned peeled, cored and sliced Hawaiian pineapple, processed and packed in water

2 Canned Hawaiian pineapple tidbits packed in water

Manufacture—1 The method of manufacture is essentially the same as for Dole 1 Hawaiian canned pineapple slices (THE JOURNAL, April 8, 1933, p 1106) with the exception that water is used to fill the cans

2 The method of manufacture is essentially the same as for Dole 1 Hawaiian canned pineapple tidbits (THE JOURNAL, April 8, 1933, p 1106) with the exception that water is used to fill the cans

Analysis (submitted by manufacturer) —

	Sliced per cent	Tidbits per cent
Moisture	85.6	88.0
Total solids	14.4	12.0
Ash	0.4	0.3
Fat (ether extract)	0.02	0.02
Protein (N \times 6.25)	0.3	0.3
Total sugar as invert sugar	11.6	9.7
Crude fiber	0.3	0.2
Carbohydrates other than crude fiber (by difference)	13.4	11.2
Titrateable acidity as citric acid	0.4	0.5
Iron (Fe)	0.0004	0.0003
Manganese (Mn)	0.0003	0.0002
Copper (Cu)	0.0002	0.0001
Calcium (Ca)	0.01	0.01
Magnesium (Mg)	0.01	0.01

Calories—1 0.5 per gram, 14 per ounce
2 0.4 per gram, 11 per ounce

Vitamins—Biologic assay shows canned pineapple to contain vitamin A and to be a good source of vitamins B and C. Practically equivalent to the fresh fruit in A and B, slightly inferior in C.

Claims of Manufacturer—Fancy grade representing fruit most uniform in color, flavor, texture and workmanship. Packed in water. Practically equivalent to the fresh fruit in nutritional values.

HALE'S PRIDE BRAND PURE GRAPEFRUIT JUICE

HALE'S PRIDE BRAND PURE ORANGE JUICE

Distributor—Hale Halsey Company, McAlester, Okla.

Manufacturer—Dr. P. Phillips Company, Orlando, Fla.

Description—Canned Florida grapefruit and orange juices sweetened with added sucrose and retaining in high degree the original natural vitamin content, the same as Dr. P. Phillips Pure Florida Grapefruit Juice (THE JOURNAL, Jan 7, 1933, p 43) and Dr. P. Phillips Pure Florida Orange Juice (THE JOURNAL, Dec 3, 1932, p 1948).

1 HOME BRAND GOLDEN SYRUP

2 FOLEY'S BRAND AMBER SYRUP

Distributors—1 Griggs, Cooper & Company, St. Paul
2 Foley Bros. Grocery Company, St. Paul. Subsidiary of Griggs, Cooper and Company.

Manufacturer—Griggs, Cooper and Company, St. Paul.

Description—Table syrups, corn syrup with refiners' syrup.

Manufacture—Corn syrup and refiners' syrup are mixed with boiling water in definite proportions, heated, strained and automatically filled into cans.

<i>Analysis</i> (submitted by manufacturer) —	per cent
Moisture	23.7
Ash	1.4
Fat (ether extract)	0.0
Protein (N \times 6.25)	0.2
Reducing sugars as dextrose	30.4
Sucrose	7.0
Dextrins (by difference)	37.2
Acidity as HCl	0.07
Sulfur dioxide	none
pH	5.2

No methods are available for accurately determining the composition of syrups of this nature, therefore the foregoing analysis is roughly approximate.

Calories—3 per gram, 85 per ounce.

Claims of Manufacturer—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking, baking and the table.

HOOS' PROTEIN MILK

Distributor—Louis Hoos, Scientific Milk Products, Chicago.

Manufacturer—The Borden Sales Company, New York.

Description—Spray dried mixture of milk curd (casein and milk fat) and cultured skim milk.

Manufacture—Fresh milk, produced under sanitary conditions, is pasteurized (63 C, thirty minutes), and coagulated with rennin. The curd (casein and fat) is separated from the whey, mixed with cultured skim milk prepared by adding a pure culture starter to pasteurized skim milk and the mixture is spray dried and packed in cans.

<i>Analysis</i> (submitted by distributor) —	per cent	Diluted with water (3 oz. to 1 quart) per cent
Moisture	2	92.6
Ash	5	0.4
Fat	30	2.5
Protein (N \times 6.38)	39	3.0
Lactose (by difference)	21	1.5
Titrateable acidity as lactic acid	3	

Calories—5.2 per gram, 148 per ounce.

Claims of Manufacturer—For use under the direction of a physician in nutritional disturbances of infancy, or when a modified milk food richer in protein and lactic acid and lower in lactose than dried whole milk is desired.

CELLU BRAND YELLOW STRING BEANS, WATER PACKED

Distributor—Chicago Dietetic Supply House, Inc., Chicago.

Packer—Geneva Preserving Company, Geneva, N. Y.

Description—Canned yellow string beans, packed in water.

Manufacture—Selected wax beans, picked at the proper degree of maturity, are snipped, sorted, graded, again inspected, blanched, washed and packed in cans. The cans are filled with hot water, sealed and processed.

<i>Analysis</i> (submitted by distributor) —	per cent
Moisture	94.8
Total solids	5.2
Ash	0.7
Fat (ether extract)	0.1
Protein (N \times 6.25)	0.9
Crude fiber	0.4
Starch (diastase method)	2.2
Carbohydrates other than crude fiber (by difference)	3.1

Calories—0.2 per gram, 6 per ounce.

Claims of Manufacturer—Choice quality beans packed without added sugar or salt. For use in special diets in which sugar or salt is proscribed or in quantitative diets of calculated composition.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, MARCH 14, 1936

CONCUSSION OF THE SPINAL CORD

Much more knowledge seems to be available concerning concussion of the brain than of the corresponding lesion of the spinal cord. It is interesting, moreover, that information has accumulated concerning symptomatology of the former condition and pathology of the latter.

The clinical manifestations of concussion of the spinal cord include a multiplicity of clinical pictures, with apparently grave initial symptoms, which disappear or tend to improve rapidly. The symptoms are not, however, always transient in character, and serious, permanent disturbances may result. The condition varies, depending on the particular segment of the cord that is involved as well as on the evolution of the lesions.

Because of its relatively greater fixation and rigidity and its greater exposure to trauma the thoracic portion of the vertebral column is the most frequent seat of trauma causing concussion of the spinal cord. The trauma need not be direct. It may be transmitted from the vertex or from the sacral region. The earliest symptoms of concussion of the thoracic segment of the spinal cord frequently resemble those of a total physiologic severance of the cord with a complete flaccid motor and sensory paraplegia, urinary and fecal retention, abdominal distention, hematuria, edema of the lower extremities and bed sores. The course is as a rule favorable, with a transition from a flaccid to a spastic paraplegia. A fatal outcome in the course of a few weeks resulting from an infection from a bed sore or from bronchopneumonia, has been observed.

The simplest form of concussion of the cervical segment of the cord is that with a total loss of function of the spinal cord below the lesion. This concussion gives rise to a quadriplegia associated with anesthesia the upper limit of which corresponds to the lesion. There is retention of urine and feces, abdominal distention and respiratory difficulty if the lesion is sufficiently high. The symptoms may entirely disappear, although certain disturbances usually remain and give

rise to definite clinical types. Lhermitte¹ divides these somewhat schematically into the following groups: 1 Spastic quadriplegia, the paralysis being more pronounced in the upper extremities, associated further with sympathetic phenomena such as the Horner syndrome, with vasomotor, sweating, thermic and pilo motor disturbances. There exist as a rule spasticity and incoordination of the lower extremities, with sphincter and genital disturbances. 2 More frequently disappearance of the initial quadriplegia, which leaves in its place a form of spinal hemiplegia with a more marked paralysis of an upper extremity, loss of sense of temperature of syringomyelic type and at times most excruciating pains in the upper extremity. 3 Brachial monoplegia associated with the Brown-Sequard syndrome and a rarer form of brachial diplegia. 4 Spastic cerebellar type, in which disturbances of coordination predominate over the paralytic phenomena. 5 "Formes frustes," a transient type which takes on a functional hysterical character and is characterized mainly by fatigue.

Cases have been observed in which there are bulbar symptoms, such as involvement of the muscles of the neck and the tongue and of sensory distribution of the trigeminal nerve.

Concussion of the lumbar segment is least frequent. It is accompanied by a flaccid paralysis of the lower extremities and involvement of the sphincters. Some time later there develop pathologic tendon reflexes and a positive Babinski reflex. The course is usually favorable, terminating not infrequently in a complete restoration of function.

Concussion of the spinal cord may give rise to clinical syndromes with predominantly sensory disturbances in which radicular pains, causalgic, hyperalgetic, shooting pains or heteresthesia may be present. Many observers believe the pathogenesis of these pains to be radicular. Lhermitte thinks they are due to loss of myelin sheaths of the intraspinal fibers, while the causalgic pains are due to lesions of the sympathetic fibers.

In a delayed form, symptoms appear hours, days or even weeks after the trauma. The nerve tissue lesions here are probably due to a progressive arteriopathy (Foerster).

The anatomopathologic changes in concussion of the cord were studied extensively during the World War. There may be small punctate or focal hemorrhages disseminated throughout the white substance or the gray matter, not however as extensive as those seen in hematomyelia. There is no blood in the cerebrospinal fluid. Small islands of focal necrosis disseminated in the white substance, and not always corresponding to the area of distribution of the blood vessel, constitute a more characteristic lesion. Some consider the primary acute degeneration of nerve fibers the most typical lesion in the condition. With proper staining, hypertrophy, thickening and change in form of the axis

¹ Lhermitte, Jean. Etude de la commotion de la moelle. *Rev. neurol.* 39: 210 (Feb.) 1932.

cylinders may be observed. Alterations of the myelin sheaths and a glial reaction are usually present. The spinal canal may be compressed or dilated. Radicular changes either of the hemorrhagic or of the primary degenerative type have been described.

Opinions regarding the pathogenesis of these lesions vary from that of a purely mechanical hypothesis of disturbed circulation, increased pressure in the cerebrospinal fluid and primary physicochemical changes in the cells and fibers of the nervous tissues to that of a hypothesis of cytotoxins developing as the result of trauma and causing more or less extensive softening of the cord.

Concussion of the spinal cord may be considered a definite clinical or at least an anatomoclinical form of traumatic lesion of the spinal cord.

CHLOROPHYLL AND BLOOD REGENERATION

Years ago the suggestion was made¹ that chlorophyll, the green pigment of the leaves of plants, is similar chemically to the nonprotein portion of hemoglobin. Subsequent investigations have borne out this view and have demonstrated that both are composed of a nucleus of substituted pyrrol rings. As is well known the fundamental difference between the two pigments is that iron is present in hemoglobin whereas magnesium occurs in chlorophyll. The similarity of the two substances has prompted speculation regarding the possible value of chlorophyll as an agent for promoting blood formation. Animal experiments to test the possible existence of such a relation have yielded conflicting results. It has been stated² that rabbits rendered anemic by bleeding recover more rapidly if chlorophyll is added to the diet. Somewhat similar results have been obtained by several other investigators in rats³ and in dogs.⁴ Certain of these studies, however, were undoubtedly complicated by the presence of iron and perhaps other contaminants in the chlorophyll preparations used. In contrast to the foregoing favorable results, another group of investigators⁵ has found that green leafy plants are not especially effective in promoting hemoglobin formation in the chronic hemorrhagic anemia of dogs and have concluded that chlorophyll may be very like hemoglobin in its chemical structure but the normal dog cannot utilize much if any of the chlorophyll nucleus for hemoglobin construction even under maximal stress.⁶

¹ Verdet M. F. *Compt. rend. Acad. d. sc.* 33: 689 1851.
Hoppe Seyler *Zeitschr. Ueber das Chlorophyll der Pflanzen* *Zischr. f. physiol. Chem.* 3: 359 1879.

² Burgi Emil. *Co. Bl. f. Schweiz. Aerzte* 46: 449 1916 cited by Patek.

³ Scott I. M. D. *Studies in Anemia. I. The Influence of Diet on the Occurrence of Secondary Anemia Following Repeated Hemorrhages in Rat* *Biochem. J.* 17: 157 1923.

⁴ Rinet Leon and Strumza M. V. *Le pouvoir antianemique de la chlorophylle des sels de fer et de cuivre* *Le Sang* 5: 1041 1934.

⁵ Whipple G. H. and Robscheit Robbings F. S. *Blood Regeneration in Severe Anemia. IV. Green Vegetable Feeding* *Am. J. Physiol.* 2: 431 (May) 1925. *IX. Influence of Spinach, Cabbage, Onions and Orange Juice* *ibid.* 32: 400 (March) 1930.

Chlorophyll has likewise received some attention as a possible hematopoietic agent in man, and a claim has been made for its beneficial action.⁷ These results have been regarded with skepticism, however, since the preparation employed in the study contained only trivial amounts of chlorophyll.⁸ The most recent investigation of the effect of chlorophyll in human hematopoiesis⁹ was conducted on a group of fifteen adult patients with chronic hypochromic anemia. Chlorophyll and certain of its degradation products were administered to the patients with or without iron and the effect on the proportion of reticulocytes and concentration of hemoglobin and erythrocytes in the blood was closely followed. In all cases the oral administration of the chlorophyll preparations either alone or with small amounts of iron was entirely without effect. However, the administration of the test substances subsequent to the giving of larger amounts of iron produced a noticeable effect. There occurred a second reticulocyte response followed by a rise in the concentration of hemoglobin greater than that observed in the same patient with iron alone. Similar results were obtained when the materials were given parenterally thus indicating that the effect of the chlorophyll derivatives was not one of increasing the absorption of iron from the gastro-intestinal tract.

While further work is necessary before conclusions are drawn this investigation does suggest that, in the presence of adequate amounts of iron, the body may be able to use preformed pyrrol substances for the building of hemoglobin. However, as was stated,⁷ it should be emphasized that such substances are not recommended for therapeutic purposes, since iron therapy alone is an adequate treatment in most cases of uncomplicated chronic hypochromic anemia.

SEDIMENTATION RATE IN JUVENILE RHEUMATISM

Few recently introduced laboratory tests have been studied in relation to as wide a variety of clinical disorders as the so-called blood sedimentation test. In the rheumatic diseases, for example, most are agreed that the rate of erythrocyte sedimentation usually parallels closely the activity of the disease. Why this should be so, and why there are some notable exceptions, is still largely a matter of conjecture. Payne and Schlesinger¹ have recently reported further studies on the sedimentation rate in juvenile rheumatism.

They first divided their patients on a clinical basis (without reference to the test) into active and non-active cases. The criteria used were pulse rate, temperature, weight and cardiac signs, in doubtful

⁶ Burgi Emil. *Das Chlorophyll als Pharmakon* Leipzig Georg Thieme 1932 cited by Patek.

⁷ Patek A. J. *Chlorophyll and Regeneration of the Blood. Effect of Administration of Chlorophyll Derivatives to Patients with Chronic Hypochromic Anemia* *Amer. Int. Med.* 57: 73 (Jan.) 1936.

⁸ Payne W. W. and Schlesinger Bernard. *A Study of the Sedimentation Rate in Juvenile Rheumatism* *Arch. Dis. Childhood* 10: 403 (Dec.) 1935.

cases the cardiac signs were supplemented by the electrocardiogram. Two hundred and twenty-nine children were included in the study. An average of seven sedimentation tests was performed for each patient. One hundred and forty children were included in the nonactive group. Seventy-four of these had no signs of cardiac involvement and with three exceptions showed no rise in the sedimentation test apart from intercurrent infections. Sixty-six children had had heart disease at some time or other. In this group the sedimentation rate was normal in fifty-six and raised in ten (five for only a transitory period). Active rheumatism was present in eighty-nine cases. Sixty-six of these showed rapid improvement and were finally considered nonactive clinically. A corresponding fall to normal was shown by the sedimentation reaction in fifty-eight. In sixteen cases the activity was marked and prolonged. Here without exception the sedimentation rate was raised in close agreement with the clinical condition. In all but one of the seven fatal cases the sedimentation rate also was raised. They concluded, therefore, that it appears justifiable to regard the test as valuable in following the progress of rheumatic children with greater accuracy. Many other conditions, however, besides active rheumatism may increase the sedimentation rate, and some of these were the subject of further investigation.

Acute tonsillitis or nasopharyngitis generally produces a rise in the sedimentation rate. With few exceptions, chronic tonsillar sepsis does not affect the rate. Tuberculosis and rheumatoid arthritis both increase the sedimentation rate and both sometimes enter into the picture of juvenile rheumatism. In acute chorea, strangely enough, if any rise in the sedimentation rate occurs it is usually small and transitory. Congestive heart failure frequently results in a fall of the rate to normal even in the presence of active disease. There is further confirmation of this observation in another current study by Wood.² He found that congestive heart failure delays the sedimentation rate regardless of the pathologic changes in the heart. It thus follows that as an indication of the presence or absence of activity the sedimentation rate is a valueless measurement in cases of rheumatic carditis when complicated by congestive failure. Rapid rates are masked, and unless this fact is appreciated serious error in interpretation may occur. The effect of anemia also has been considered. The method of bringing the blood count to normal before performing the test is too cumbersome for routine use. Hence a graph showing the average normal value of the sedimentation rate at any known red cell count was constructed. By comparison of the red blood count, sedimentation rate and graph, apparently satisfactory corrections were readily obtained.

² Wood, Paul. The Erythrocyte Sedimentation Rate in Diseases of the Heart. *Quart. J. Med.* 5: 1 (Jan.) 1936.

Current Comment

TOXIC EFFECTS OF SELENIUM

When attention was directed in January 1935 in these columns¹ to "the selenium problem," it was pointed out that this chemical element had been found in rather large amounts in certain grains and food plants and in soils obtained from several districts of South Dakota and the north central Great Plains area. Further, it was noted that the feeding of the selenium-containing foodstuffs to laboratory animals produced a train of symptoms resembling those of "alkali disease" of live stock foraging in affected areas. The urgent need for further work on selenium particularly with respect to the pathologic effects of the administration of this substance was stressed. Recently an investigation of this type has been reported.² The feeding of rats of a small amount of selenium as sodium selenite produced definite toxic symptoms similar to those observed in animals fed selenium-containing "toxic wheat." There was a distinct retardation of growth and an accompanying decrease in food intake. The latter effect was not due to an unpalatability of the diet, since a similar decrease in appetite was observed in animals injected with the salt. Pronounced alterations were observed also in the composition of the blood. After a preliminary rise in the concentration of hemoglobin, apparently resulting from an anhydremia, an anemia of progressively increasing severity developed. The erythrocytes of the anemic animals frequently showed achromia and later anisocytosis with polychromatophilic macrocytes. In acute cases there was a tendency toward leukopenia. Gross pathologic examinations at necropsy revealed evidence of extensive liver damage both in the animals which succumbed with acute toxic symptoms and in those which survived for a long time. The liver had a characteristic hobnailed appearance, resulting from local tissue necrosis followed by regeneration. A transudate was frequently present in the thorax or abdomen or both in those animals which died from the acute toxic effects of selenium. Similar evidence of pathologic changes in the liver has been obtained by another investigator,³ who noted also a frequent hypertrophy of the heart and spleen and an atrophy of the testes and uterus.

OPTOMETRISTS AND OPHTHALMOLOGISTS

The place of the optometrist in medical technique is, as every one knows, not yet fully established. From trends over the last quarter century it would seem that eventually optometry will become a technical specialty in medicine somewhat like that of those skilled in developing braces or crutches for other portions of the body. Optometry must be essentially a method of measurement of deficiency in muscular action or in construction of the eye with the adaptation of a crutch for the eye—the only thing that an eyeglass can really be. Never

¹ The Selenium Problem editorial. *J. A. M. A.* 104: 50 (Jan. 5) 1935.

² Franke, K. W. and Potter, V. R. A New Toxicant Occurring Naturally in Certain Samples of Plant Foodstuffs. IX. Toxic Effects of Orally Ingested Selenium. *J. Nutrition* 10: 213 (Aug.) 1935.

³ Schneider, H. A. Selenium in Nutrition. *Science* 83: 32 (Jan. 10) 1936.

theless it is well established that optometrists, like other technicians who have entered the field of medical practice, endeavor when once in the field to broaden out the scope of their activities and soon find themselves encroaching on the practice of medicine. The moment a person insufficiently trained expands beyond his limitations, he becomes a menace to those of the sick whom he attempts to treat. THE JOURNAL is moved to these comments by the observation of some literature recently developed by the Public Relations Committee of the Illinois State Society of Optometrists. The folders issued by this group are insidiously phrased to cause the public to believe that the optometrist is qualified far above physicians generally for the care of the eyes. Moreover, they attack the use of drugs for dilation of the pupil as a practice which is dangerous and unnecessary. The circular states falsely that optometrists are trained to recognize eye diseases. One finds, incidentally, that they are trained also in biology, psychology, sociology, economics and ethics. An observation of the circular would indicate that their training in at least one of these fields has been somewhat deficient. In general, ophthalmologists have not been greatly distressed by the work of the optometrist, since in many large communities there are optometrists who endeavor to practice their technical specialty with due regard for their limitations. If, however, the official organization of optometrists endeavors not only to expand the services beyond the limitation of optometric training but also, by insidious propaganda, to induce the public to have a false confidence in their qualifications, a situation must develop in which organized medicine will have to take definite action.

Association News

RADIO BROADCASTS

The American Medical Association broadcasts over WEAf, the Red network instead of the Blue as formerly and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time 3 o'clock mountain time 2 o'clock Pacific time) each Tuesday presenting a dramatized program with incidental music under the general theme of 'Medical Emergencies and How They Are Met'. The title of the program is 'Your Health'. The program is recognizable by a musical salutation through which the voice of the announcer offers the toast 'Ladies and gentlemen your health!'. The theme of the program is repeated each week in the opening announcement which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

Red Network—The stations on the Red network of the National Broadcasting Company are WEAf WEEI WTIC, WJAR WTAG WCSH KYW WFBR WRC WGY, WBEN WCAf WTAM WWJ WMAQ KSD WHO, WOW, WDAF.

Pacific Network—The stations on the Pacific network are KGO KPQ, KFI, KGW KOMO KHQ, KFSD KTAR.

Network programs are broadcast locally or rejected at the discretion of the local station. The lists indicate stations to which programs are available.

The next three programs are as follows:

March 17 Eyesight Saving W. W. Bauer M.D.
March 24 Hay Fever and Asthma Morris Fishbein M.D.
March 31 Let Your Doctor Decide W. W. Bauer M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Bill Introduced—H. 221-X proposes to require the payment annually to the board of health of Mobile County, out of the general county fund of such money as is reasonably necessary for the maintenance and operation of a county health department, not less than 15 cents per capita.

CALIFORNIA

Medical Board Reappointed—The following members of the California Board of Medical Examiners have been reappointed: Drs. Harry V. Brown, Glendale; William R. Molony, Los Angeles; Fred R. DeLappe, Modesto; and Charles B. Pinkham, San Francisco. Dr. Frederick W. Didier, Wheatland, has been appointed to succeed the late Dr. Percy T. Phillips, Santa Cruz.

Society News—The San Francisco County Medical Society was addressed March 10 by Drs. Robert R. Newell and Eric Liljencrantz on "Usefulness of Roentgen Therapy in Inflammatory Processes" and "Carcinoma of the Breast—Rationale of Treatment" respectively. At a meeting of the Los Angeles Society of Neurology and Psychiatry, March 18, Drs. Walter F. Schaller, San Francisco, will discuss "The Nature of Petechial Hemorrhages in Traumatized Brains" and Eberle Kost Shelton, Santa Barbara, "The Psychologic Aspects of Physiologic Imbalance." A symposium on appendicitis was presented before the surgical section of the Los Angeles County Medical Association, March 13, by Drs. Fred R. Fairchild, Woodland; John W. Budd, Jr., Clarence G. Toland, Charles E. Phillips, Los Angeles, and Arthur Dean Bevan, Chicago.

COLORADO

Society News—At a meeting of the Larimer County Medical Society in Loveland, February 5, Drs. James B. Walton, Denver, discussed problems of the new-born, and Gerrit Heusinkveld, Denver, obstetrics. The Northeast Colorado County Medical Society was addressed in Sterling, February 13, by Drs. Chesmore Eastlake on "Differential Diagnosis of Influenza" and Philip Work, "What the Patient Calls Nervousness." Both are from Denver. Dr. Royal C. Adkinson, Florence, discussed hyperinsulinism before the Fremont County Medical Society in Canon City, January 27. Dr. Edwin D. Burkhard read a paper entitled "A Medical Survey of 1935" before the Pueblo County Medical Society, January 21.

Cragmor Sanatorium Reorganized—Cragmor Sanatorium, at the foot of Austin bluffs northeast of Colorado Springs, has been incorporated under the laws of the state as a 'non-profit, nonsectarian organization created for benevolent charitable and humanitarian purposes and for the treatment of tuberculosis and other ailments' as well as for research work. A board of directors of five members and an advisory board of trustees will govern the new association, through the ratification of an agreement between the old company, the bondholders' committee and certain individuals. The sanatorium was founded in 1906 by Dr. Edwin S. Solly with accommodations for twenty-five patients. Situated on 240 acres of land, the sanatorium now has a bed capacity of 130. The entire institution, valued at about \$500,000, is made up of a main building accommodating fifty-two patients, a two-story building for twenty patients, a home building with twenty-two beds, a women's cottage of eight beds, a men's cottage of eight beds, nine cabins and one other small unit of eight beds. Adjoining the sanatorium is Cragmor Village consisting of twenty-seven cottages five of which are owned by the sanatorium and the others by persons who have been permitted to erect their own cottages on the sanatorium grounds. In addition there is a large four-story cement building which was formerly used as a nurses home. Dr. Alexius M. Forster has been physician-in-chief at the institution since 1910.

DELAWARE

Society News—Dr. Jesse O. Arnold, Philadelphia, presented a paper before the New Castle County Medical Society in Wilmington, January 21, entitled "Revising the Code of Prenatal Care." Dr. John T. King, Baltimore, addressed the society, February 18.

DISTRICT OF COLUMBIA

Medical Bill in Congress—S 4166, introduced by Senator Bulow, South Dakota, provides that the compensation of interns and student nurses who are subject to the Classification Act of 1923, serving in government hospitals located in the District of Columbia, may be fixed by the Civil Service Commission without regard to the compensation schedules contained in the Classification Act.

Protest Curtailment of Health Budget—At a public meeting in Washington, called by the Medical Society of the District of Columbia, February 16, resolutions were adopted protesting the curtailment of the budget for health work in the district for the fiscal year 1936-1937. In a statement read by Dr. Prentiss Willson, chairman of the committee on program and resolutions, it was pointed out that the per capita expenditure for public health is far below standard, that the health department lacks adequate space, personnel and equipment to carry on its work efficiently, that provisions for the care of venereal disease at the municipal clinics are hopelessly inadequate and that too few nurses are employed at Gallinger Municipal Hospital and the Children's Tuberculosis Sanatorium at Glenn Dale Md. Members of the Medical Society of the District of Columbia and representatives of other health agencies and lay organizations attended the meeting. Speakers included Rabbi Abram Simon, who presided, Dr. Sterling Ruffin, president of the medical society, Dr. Herbert P. Ramsey, Dr. Harry Stoll Mustard, Baltimore and Rev. John O'Grady, director of Catholic Charities for the district. Representative Thomas L. Blanton of Texas, chairman of the House subcommittee on district appropriations, was present.

FLORIDA

Society News—At a meeting of the Tri-County Medical Society (DeSoto-Hardee-Highlands) in Sebring February 11, Drs. Joe M. Bosworth, Lakeland, discussed "The Use of the McBurney Incision" and Hartley E. Boorum, Sebring, Narcoplepsy. Dr. Harry A. Peyton, Jacksonville, read a paper on "Cancer of the Small Intestine" before the Duval County Medical Society in Jacksonville, February 4. At a meeting of the Leon-Gadsden-Liberty-Wakulla-Jefferson County Medical Society in Quincy, January 16, speakers included Drs. Harry B. McEuen, Jacksonville, treatment of an extensive carcinoma with lantern slide and color motion picture demonstration of the results, William W. Massey, Quincy, a review of the modern treatment of burns, Courtland D. Whitaker, Marianna, acute coronary thrombosis and Ralph M. Clements, Chattahoochee, conditions affecting the eye, ear, nose and throat. Dr. George R. Creekmore, Brooksville, read a paper before the Pasco-Hernando-Citrus County Medical Society at its meeting in Brooksville, January 9, entitled "Thigh Amputations."

ILLINOIS

Society News—Mr. Harold Baker, East St. Louis, discussed "The Harrison Narcotic Act" before the St. Clair County Medical Society in East St. Louis March 5. Speakers at the March 4 meeting in Belleville included Drs. Robert S. Berghoff and Clayton J. Lundy, Chicago, on "Diagnosis and Treatment of Heart Disease" and "Electrocardiogram in Early Diagnosis of Arteriosclerotic Heart Disease" respectively. At a meeting of the LaSalle County Medical Society in LaSalle, February 26, speakers were Drs. Edward A. Roling, Chicago, on "Eye Conditions of Interest to the General Practitioner," Tell Nelson, Chicago, "Diagnosis of Allergic Conditions," and Edward G. Tatge, Evanston, "Allergy in General Practice." Dr. Chauncey C. Maher, Chicago, discussed "Hypertensive Vascular Disease" before the Adams County Medical Society in Quincy, March 9.

Chicago

Ranson Lecture—Dr. Hugh Cabot, Rochester, Minn., delivered the eighth annual Stephen Walter Ranson Lecture at Northwestern University School of Medicine, February 25, on "The Changing Practice of Medicine."

Increase in Heart Disease—In 1935 there were 10,085 deaths attributed to heart disease as compared with 9,654 in 1934. These totals, based on statistics reported by the Chicago Heart Association, compare with 35,424 deaths from all causes in 1935 and 36,282 in 1934.

Hospital News—Cook County Hospital cared for 69,891 patients during 1935, although the normal daily capacity of the hospital is 2,600, a daily average of 2,619 was maintained by placing beds in hallways and opening two new floors in the children's ward which provided 190 additional beds. The

number of persons who died in the hospital was 6,650. There were 82,721 patients turned away from the hospital, of the 25,284 received first aid treatment.

Society News—Dr. Anton J. Carlson gave an address at a meeting of the Cook County League of Women Voters in the Palmer House, March 14, entitled "Buyers Beware! The New Food and Drug Act. A Test in Consumer Effectiveness." Speakers before the Chicago Gynecological Society, March 20, will include among others, Drs. George H. Rezek, on "A Biological Test for the Diagnosis of Intra-Uterine Fetal Death" and Harold H. Hill, Oak Park, "Value of the Sturmdorff Cone for Biopsy Material in the Detection of Early Carcinoma of the Cervix Uteri."

Hospital Council Formed—The Chicago Hospital Council was recently organized to work out a program of group hospital insurance, newspapers report. Hospitals that have joined the council are Augustana, Berwyn, Garfield Park Community, Bethany, Grant, Henrotin, Holy Cross, Home for Destitute Crippled Children, St. Anthony de Padua, Little Company of Mary, Lutheran Deaconess, Michael Reese, Mount Sinai St. Bernard's, St. Joseph St. Luke's, University of Chicago Clinics including Billings Memorial, Bobs Roberts Memorial and the Max Epstein clinics, Women's and Children's Hospital, and Woodlawn.

Survey of Visual Conditions—A survey of visual conditions in public schools in Chicago is under way under the auspices of the board of education, as a project of the works progress administration. The eyesight of all children will be tested. The Illinois Society for the Prevention of Blindness is supervising the making of the tests. Children whose vision falls below 20/70 will be required to have an examination by an ophthalmologist. Members of the Chicago Ophthalmological Society who will assist in making the examinations are requested to consider this work as a partial charity since it is primarily for the underprivileged. Rates have been fixed for patients able to pay a fee, and free choice of physician is urged.

INDIANA

Fifty Years of Practice—Dr. Walter N. Thompson, Sullivan, was guest of honor at a banquet given by the Sullivan County Medical Society, February 14, to observe his completion of fifty years in the practice of medicine. All in Sullivan, Dr. Jacob T. Oliphant, Farmersburg, was master of ceremonies, and speakers included Drs. James B. Maple, Sullivan, Arthur F. Weyerbacher and Willis D. Gatch, Indianapolis. Dr. Joseph R. Crowder presented Dr. Thompson with a picture of the county medical society and a gold wrist watch engraved with the following: "Presented to Dr. Walter N. Thompson by the Sullivan County Medical Society in honor of fifty years of service February 16, 1936. Dr. Thompson's father, Dr. J. J. Thompson, practiced fifty years and six months in Sullivan."

Society News—Dr. Willis D. Gatch, Indianapolis, discussed cancer before the Muncie Academy of Medicine February 11. At a meeting of the Hamilton County Medical Society in Cicero, February 11, Dr. Marlow W. Mamon, Indianapolis, spoke on "Laryngeal Obstruction." The Putnam County Medical Society was addressed in Greencastle, February 11, by Dr. James O. Ritchey, Indianapolis, on "Non-tuberculous Chest Infections." At a meeting of the Parke Vermillion County Medical Society in Clinton February 19, Dr. George S. Bond, Indianapolis, discussed "Diseases of the Coronary Arteries." Dr. Harold D. Lynch, Evansville, spoke on communicable diseases before the Knox County Medical Society in Vincennes, February 11. Dr. Fred Bierly, Jr., Elkhart, discussed high and low blood pressure before the Floyd County Medical Society in New Albany, February 14. The Tippecanoe County Medical Society was addressed in Lafayette, March 10, by Dr. Delbert O. Kearby, Indianapolis, on "Bronchoscopy, Better Diagnosis and Treatment of Bronchial Disturbances." Dr. Mason B. Light read a paper on "Endoscopy in the Diagnosis and Treatment of the Food and Air Passages" before the Indianapolis Medical Society, February 25.

KANSAS

Course in Neuropsychiatry—A graduate course on neuropsychiatry in general practice will be held at the Menninger Clinic, Topeka, April 20-25. The course will be directed to the application of modern neuropsychiatric principles to cases which the general practitioner frequently sees in this field. Enrollment in the course is limited to thirty. In addition to members of the Menninger Clinic, guest lecturers will be Drs. Israel S. Wechsler, New York, and James W. Kernohan, Rochester, Minn.

MASSACHUSETTS

Personal—Dr William B Keeler, newly appointed health commissioner of Boston, was guest of honor at a dinner at the Myles Standish Hotel, January 29. Dr Charles I Wilinsky acted as host and toastmaster.—A farewell dinner was given to Dr Karl M Bowman, formerly chief medical officer of the Boston Psychopathic Hospital, January 30 by about 100 friends and associates. Dr Bowman has been named director of the psychiatric division of Bellevue Hospital New York.

MICHIGAN

Koch Loses Malpractice Suit—A verdict for \$5,500 was returned by a jury in the circuit court of Wayne County, January 24, in a malpractice suit instituted against William T Koch, director of the Koch Cancer Foundation by Alfred A Fortner, a former patient. This case was a retrial of a former proceeding in which a verdict was rendered against Koch for \$25,000, reduced by the trial court to \$7,000. The supreme court of Michigan on an appeal by Koch reversed the judgment for certain errors committed by the trial court and ordered a new trial (THE JOURNAL, February 22, p 651). According to the newspapers, Fortner alleged that Koch charged him \$300 each for injections of a cancer serum when he was not suffering from cancer. He claims to have gone to Koch believing he had cancer and was treated with the serum from June to September 1931, after which Koch advised him to discontinue the treatment and go to a hospital. Fortner then discovered he had another disease. The complaint charged Koch with negligence. Koch graduated from the Detroit College of Medicine and Surgery in 1918. Less than a year after his graduation in medicine, he announced that he had developed a cure for cancer. In 1921 he was dropped from membership in the Wayne County Medical Society for exploiting a so called cancer cure (THE JOURNAL, May 8, 1926, p 1469. July 14 1934, p 116).

MINNESOTA

Society News—Speakers before the Hennepin County Medical Society March 11 were Drs Herbert A Burns Ah-Gwah-Ching, on "Indian Medicine" and Arthur C Kerkhof Minneapolis, "The Gastroscope".—At a meeting of the Minnesota Academy of Medicine, March 11, speakers were Drs Louis A Buie, Rochester on "Ancient and Modern Knowledge Concerning Anal Fistula" and Charles B Wright, Minneapolis, "Multiple Myeloma and Its Differential Diagnosis".

Minneapolis Children Free from Malnutrition—There is practically no malnutrition evident among children in the Minneapolis public schools, according to Dr Francis E Harrington, director of hygiene. A general observation survey of the school children was made during the period from September to the Christmas holidays to determine as nearly as possible their nutritional status. There are occasional cases of undernourishment but the percentage in the school system is less than was found five years ago. The children appear, as a rule, to be having better home care. These facts are supported by reports from physicians throughout the city, child agencies and the children's wards at the Minneapolis General Hospital. In all instances, it was stated, malnutrition has apparently decreased.

MISSISSIPPI

Bill Passed—H 289 has passed the house proposing to enact what appears to be the uniform narcotic drug act for the regulation of the manufacture, sale, possession, prescribing, administering, dispensing, compounding and cultivating of narcotic drugs. The bill defines narcotic drugs as meaning coca leaves, opium, cannabis and every substance neither chemically nor physically distinguishable from them.

Bills Introduced—H 540 proposes to regulate the practice of chiropody or podiatry and to authorize the state board of medical examiners to examine and license applicants for such licenses. The bill defines chiropody or podiatry as the diagnosis and medical, mechanical, electrical, and surgical treatment of the minor ailments of the human foot, such as corns, callouses, warts, ingrowing and abnormal nails, bunions and similar conditions. Licentiatees are to be allowed to use such mechanical appliances as may be deemed necessary for the relief or cure of ailments of the feet. Amputation of the foot or of toes and the use of anesthetics other than local are apparently prohibited but the language of the bill in this connection is obscure. Diseases and conditions of the feet produced by kidney, heart or other systemic diseases are not to be treated by a chiropodist or podiatrist except under the direction of a regularly licensed physician. H 422, to amend the dental prac-

tice act, proposes to authorize the revocation of the license of any licentiate advertising professional superiority or the performance of professional service in a superior manner, advertising prices for professional service, advertising by means of large display glaring light sign or containing as a part thereof the representation of a tooth, teeth, bridge work or any portion of the human head, or employing advertising solicitors or free publicity press agents, advertising any free dental work or free examination, advertising to guarantee any dental service or to perform any dental operation painlessly, or advertising any commercial dental laboratory or clinic, either pay or free when it is operated in connection with the practice of a licensed dentist or dental hygienist.

MISSOURI

Society Memberships Presented to Interns—At a recent meeting the staff of the DePaul Hospital, St. Louis presented a junior membership in the St. Louis Medical Society to each intern connected with the hospital. The *Journal of the Missouri Medical Association* compliments the hospital staff for this action.

NEW JERSEY

Society News—Dr Oliver Spurgeon English, Philadelphia addressed the Burlington County Medical Society, Moorestown, January 9, on management of the neurotic patient.—Dr Joseph C Doane, Philadelphia, addressed the Cape May County Medical Society, January 14, on "The Autonomic Nervous System in General Practice".—Dr Walter E Dandy, Baltimore, addressed the Academy of Medicine of Northern New Jersey Newark, February 20, on "Treatment of Injuries of the Head".—At a meeting of the Monmouth County Medical Society January 6, Dr William P Thompson, New York, spoke on splenomegaly.—Dr Philip F Williams, Philadelphia, addressed the Essex County Medical Society, March 12, on "Intrapartum Care in Its Relation to Maternal Welfare".

NEW YORK

Dr Cheney Appointed in Charge of Bloomingdale Hospital—Dr Clarence O Cheney, director of the New York Psychiatric Institute and Hospital at the Columbia University Medical Center, has been appointed superintendent and director of the Bloomingdale Hospital, White Plains, succeeding the late Dr Mortimer W Raynor. For five years prior to his appointment at the New York Psychiatric Institute and Hospital in 1931, Dr Cheney had been director of the Hudson River State Hospital, Poughkeepsie. He was secretary of the American Psychiatric Association from 1928 to 1933 and is now president of the organization. When the association established a certification board in 1933 Dr Cheney was named its first chairman. He will continue in his present position until the end of the present fiscal year June 30.

Bills Introduced—S 1259 to amend the public welfare law in relation to the manner of providing medical care to indigents, proposes to require the appropriate public welfare official to provide medical care for the indigent sick in their homes and to permit the patient to be attended by his family physician or other physician of his own choice. S 1341 proposes to prohibit any person who conducts a retail store for the sale of footwear and who accepts orders for footwear to fit abnormal feet from accepting such orders except on the prescription of registered podiatrists. S 1389, to amend the medical practice act, proposes to authorize the revocation of the license of a physician who (1) has employed, hired, procured or induced an unlicensed person to practice medicine, (2) who has aided or abetted in the practice of medicine a person who is not licensed so to practice, or (3) who has advertised for patronage, by means of handbills, posters, circulars, stereopticon slides, motion pictures, radio, newspapers or magazines. S 1393 proposes to require the board of regents of the University of the State of New York, prior to Jan 1, 1937, to establish and appoint a state board of chiropractic examiners. This board after its organization would establish rules and regulations fixing the qualifications of applicants for licenses to practice chiropractic, the examination of such applicants, and the granting and issuing of licenses to practice chiropractic. The bill proposes to define chiropractic, in effect, as the adjustment of the human skeletal frame according to the doctrine of chiropractic. Such practice is not to include the performance of surgical operations with the use of instruments or the prescribing or use of drugs or medicines but x-rays may be used for the purpose of examination. S 1404 and A 1690, to amend the narcotic drug act, proposes to define 'wholesaler' as 'a

person who supplies others than consumers with narcotic drugs or preparations containing narcotic drugs that he himself has not produced or prepared." S 1416 proposes to require every physician attending any person whom he believes suffering from poisoning by lead, phosphorus, arsenic, brass, wood alcohol, mercury or other compounds, or from anthrax, or compressed air illness, or from any occupational disease contracted as the result of the nature of such person's employment, to report the facts to the industrial commissioner. A 1510, to amend the medical practice act, proposes to require applicants for licenses to practice medicine to be citizens of the United States. The present law merely requires an applicant to have declared his intention of becoming a citizen. A 1511, to amend the medical practice act, proposes that "notwithstanding the provisions of the act or of any other general or special law, no license or certificate, wherever issued, shall be endorsed without examination as a license to practice medicine in New York unless the holder thereof shall have graduated from a medical school or college registered as maintaining at the time a standard satisfactory to the [education] department. A 1683 proposes to prohibit the sale or possession with intent to sell, of any inaccurate clinical thermometer, defined as "every thermometer intended for taking the temperature of human beings and animals." A clinical thermometer is to be deemed to be inaccurate (a) if, when tested with a standard clinical thermometer, the mercury fails to register within plus or minus two tenths of a degree Fahrenheit, (b) if the mercury column, by reason of its own weight, or for any reason other than through the application of force, retreats in the tube at any point in the scale, (c) if the scale fails to show accurately, clearly and legibly, graduation lines and numbers from 96 to 106 degrees Fahrenheit or (d) if the maker's name or trademark is not clearly and legibly engraved thereon or where the trademark appears thereon, such trademark has not been filed with the department of health.

New York City

Sixth Harvey Lecture—Dr Richard E Shope of the Department of Animal and Plant Pathology, Rockefeller Institute for Medical Research, Princeton, N. J. will deliver the sixth Harvey Lecture at the New York Academy of Medicine March 19. His subject will be "Influenzas of Swine and Men." The seventh lecture will be given by Dr Warren H Lewis, Baltimore, professor of physiologic anatomy and research associate, Carnegie Institution of Washington, April 16, on "Malignant Cells."

Blizzard Class Reunion—The forty-eighth reunion of the so-called Blizzard Class, which graduated from Bellevue Hospital Medical College on the night of the famous blizzard of March 12, 1888, was held at Cavanagh's Restaurant March 12. Of 144 members of the class, twenty-five who responded to the invitation seemed to be still in practice it was reported. According to *New York Medical Week* the "Blizzard Men of 1888" an organization of professional and business men, was to meet at a luncheon at the Hotel Pennsylvania for a reunion on the anniversary date. The *New England Journal of Medicine* announces that Dr Samuel M Strong, 4233 Kissena Boulevard Flushing is interested in compiling experiences of the famous storm and hopes that physicians will send their accounts to him.

NORTH CAROLINA

Report of the Duke Endowment—The tenth annual report of the hospital section of the Duke Endowment reveals that \$5,828,048 has been given to 141 hospitals in North and South Carolina for free bed days in the last ten years, assistance was given to 51 per cent of the 908,099 inpatients treated in these institutions. The endowment contributed 30 per cent of the cost of free service in these hospitals and provided the equivalent of the total cost of free service for 480 patients daily, since aid in this field was begun. During the ten years it paid at the actual average cost of \$39.40 per patient the full cost of treatment of 147,880 patients, and built and equipped sixty-two hospitals in the Carolinas at a cost of \$2,371,791.72. Contributions from the Duke Endowment to the Carolina hospitals constituted 33.6 per cent of the contributions from all sources for the ten year period. The average daily per capita cost over the period was for all hospitals \$3.56, hospitals for white patients, \$4.16, hospitals caring for both races, \$3.57, hospitals for Negroes \$1.90. The report points out that privately operated hospitals in the Carolinas decreased from ninety-three to forty-five in the ten year period while nonprofit or public hospitals increased from forty-seven to 112. In 1924 51.2 per cent of all general hospital beds were privately operated and in 1934 only 16.7 per cent were on this basis.

OHIO

Founders' Day at State University—The annual Founders' Day program of the Ohio State University College of Medicine, Columbus, was held March 6-7. Clinics at St. Francis and University hospitals occupied the first morning. In the afternoon there was a symposium on virus diseases presented by Dr Noel Paul Hudson, F. S. Markham, W. A. Starin, Ph.D., J. M. Birkeland and Dr Oram C. Woolpert. In the evening Dr Carl V. Weller, professor of pathology, University of Michigan Medical School, Ann Arbor, delivered the Alpha Omega Alpha lecture, on "Anthony van Leeuwenhoek and His Microscopes." Saturday morning addresses were made by Drs Russell L. Haden, Cleveland, on "Mechanisms of Anemia," Gatewood, Chicago, "History of Surgery," and Martin H. Fischer, Cincinnati, "Diabetes."

PENNSYLVANIA

Society News—Dr Dean D. Lewis, Baltimore, addressed the Erie County Medical Society, Erie, February 11, on "Endothelial Tumors."—Dr William H. Guy, Pittsburgh, conducted a clinic for the Fayette County Medical Society, Uniontown, March 12, on diagnosis and treatment of skin diseases.—A symposium on the eye, ear, nose and throat was presented at a meeting of the Dauphin County Medical Society, Harrisburg, February 4, participants were Drs Jay D. Smith, George H. Seaks, Harold F. Lanshe and Byron B. Bobb.—Dr William L. Mullins, Pittsburgh, addressed the Harrisburg Academy of Medicine, February 18, on coronary occlusion.

Philadelphia

Changes at Temple University—The departments of neurology and neurosurgery at Temple University School of Medicine have been combined with Dr Temple Fay, professor of neurosurgery, as head of the department, and Dr James W. McConnell, associate professor of neurology, Graduate School of Medicine of the University of Pennsylvania, as professor of neurology. The department of pathology has been completely reorganized under the direction of Dr Lawrence Weld Smith. Promotions include that of Dr Edward Weiss from clinical professor to professor of clinical medicine.

Pittsburgh

Society News—Speakers at a meeting of the Allegheny County Medical Society, February 18, were Drs J. West Mitchell on "Vascular Diseases of the Extremities," John P. Henry "Injection Treatment of Varicose Veins," and S. Benjamin Meyers, Johnstown, "Frigidity—A Problem in General Practice."—Dr Otto H. Schwarz, St. Louis, addressed the Pittsburgh Society for Biological Research, February 20, on "Puerperal Infection."—Speakers at the meeting of the Pittsburgh Academy of Medicine, February 25, were Drs Samuel R. Haythorn, on "The Present Status of Pneumoconiosis," and Harold A. Kipp "Factors Influencing the Variations in Pressure in the Biliary Tract."

TEXAS

Society News—Drs Emmett O. Rushing and Calvin R. Hannah addressed the Dallas County Medical Society, February 13, on "Everyday Clinical Points in Classifying the Three Types of Gout" and "Prevention and Treatment of Puerperal Infection" respectively.—Dr John L. Burgess, Waco, addressed the Bosque County Medical Society, Clifton, January 16, on otolaryngology for the general practitioner.—Drs Khleber H. Beall and Samuel Jagoda, Fort Worth, addressed the Cooke County Medical Society, Gainesville, January 14, on "Coronary Occlusion" and "The Electrocardiograph as a Diagnostic Aid" respectively.—Dr Henry M. Winans, Dallas, discussed "Recent Contributions to the Knowledge of Heart Disease" as guest of the Navarro County Medical Society, January 6.

VIRGINIA

Bill Passed—S. 289 has passed the senate and the house proposing to prohibit the possession, sale, use, distribution or production of cannabis. Nothing in the bill, however, is to be construed as applying to licensed growers, licensed manufacturers of drugs and medicinal supplies, hospitals, registered wholesale and retail pharmacists or to licensed physicians, dentists and veterinarians.

Health at Richmond—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended February 29, indicate that the highest mortality rate (24.7) appeared for Richmond and that the rate for the group of cities was 14.8. The

rate for Richmond for the corresponding week of 1935 was 168 and for the group of cities, 132. The annual rate for the eighty-six cities for the nine weeks of 1936 was 137 as compared with 113 for the corresponding period of 1935. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that a city is a hospital center for a large area or that it has a large Negro population may tend to increase the death rate.

PHILIPPINE ISLANDS

Medical Society Election—Officers of the Philippine Islands Medical Association elected at the annual meeting are Drs. Rufino Abriol, Manila, president, Ramon F. Campos, Iloilo, and Juanario R. Estrada, Manila, vice presidents, and Antonio S. Fernando, Manila, secretary.

PUERTO RICO

Society News—At a meeting of the Puerto Rico chapter of the Pan American Medical Association recently Dr. Isaac F. Gonzalez Martinez was elected president, Dr. Jose Rodriguez Pastor, vice president, and Dr. Rafael Rodriguez Molina, secretary, reelected. All are from San Juan.

GENERAL

Journal for Interns—The first issue of the *American Internist* appeared in January. It is a twenty-eight page magazine edited by Harold Salkin and published independently in New York. The first issue contained short scientific articles, editorials, book reviews and an open forum.

Tri-State Meeting—Dr. Douglas Jennings, Bennettsville, S. C., was elected president of the Tri-State Medical Association of the Carolinas and Virginia at its annual meeting in Columbia, S. C., February 17-18. The 1937 meeting will be held in Norfolk, Va. Guest speakers included Drs. Edward J. G. Beardsley, Philadelphia, on 'What Life Teaches the Doctor' and 'Common Sense in Cardiac Diagnosis' and Page O. Northington, New York, 'Upper Respiratory Infections'.

Educational Films to Be Listed—The U. S. Office of Education and the American Council on Education are making a survey to list all motion pictures that have an educational value. The survey is part of the council's work toward establishment of a national educational film institute to develop use of the motion picture and other allied visual-auditory aids in all fields of learning. Any person or organization that has produced, now owns or has the exclusive distribution rights to any motion picture that should be included in the catalogue is asked to send for film catalogue cards from the American Council on Education, 744 Jackson Place, Washington, D. C.

Southern Assembly—Dr. Robert M. Adams, Ripley, Miss., was chosen president elect of the Mid-South Post Graduate Medical Assembly at the fifty-second annual session in Memphis, Tenn., February 11-14. Dr. Carl R. Crutchfield, Nashville, was installed as president. Among guest speakers were:

- Dr. Conrad Berens, New York, 'External and Ophthalmoscopic Examination of the Eye with Reference to Treatment of Underlying Diseases'
- Dr. Claude S. Beck, Cleveland, 'The Heart as a Surgical Organ'
- Dr. Frank H. Jahey, Boston, 'Indications for Surgery and Surgical Management of Gastric Lesions'
- Dr. Richard H. Jaffe, Chicago, 'Differential Diagnosis of Leukemia'
- Dr. Henry Norman Bethune, Montreal, 'Surgery of the Chest'
- Dr. Eugene M. Landis, Philadelphia, 'Diagnosis and Treatment of Peripheral Vascular Disease'
- Dr. Emil Novak, Baltimore, 'Endocrinology of the Female Reproductive Cycle'

News of Epidemics—About 110 cases of meningitis with thirty deaths in Harlan County, Ky., led health officers to close theaters and restrict public gatherings throughout the county. Newspapers reported March 7.—Schools, theaters and other places of public assembly were closed in Bowie County, Texas, where nine deaths from meningitis have recently occurred; it was reported February 27, at the same time an epidemic of influenza caused most of the schools in Jefferson County, Texas, including those in Port Arthur, to be closed.—Schools and theaters at Richlands, W. Va., and vicinity were placed under quarantine February 3, when six cases of meningitis were reported.—Four cases of meningitis with one death were reported from small towns near Allentown, Pa., February 10.—Two cases of meningitis were reported aboard the navy training ship *California State*, February 10.—Sixty-two cases of scarlet fever among inmates and employees of the Rockland State Hospital, Orangeburg, N. Y., were reported February 16.—Epidemics of mumps affecting 200 school children in Greensburg, Pa., and sixty in a grade school in Lebanon County, Pa., were reported in February.

Medical Bills in Congress—Changes in Status S 2625 has been reported to the House, proposing to extend the facilities of the United States Public Health Service to seamen on government vessels not in the military or naval establishments. H. R. 3629 has been reported to the House, proposing to authorize the acquisition of additional land for the use of the Walter Reed General Hospital. H. R. 5764 has been reported to the Senate, proposing to compensate Dr. Augustus J. O'Brien and the Grand View Hospital, Ironwood, Mich., for services rendered in connection with the treatment of persons injured by federal agents during the Dillinger raid on the Little Bohemia Lodge, Manitowish, Wisconsin. H. R. 10630, making appropriations for the Department of the Interior for the fiscal year ending June 30, 1937, has passed the House and Senate. As passed by the House, the bill authorized the Bureau of Mines to sell helium to hospitals and members of the medical profession for the treatment of disease, subject to the approval of the United States Public Health Service. The Senate struck this authorization from the bill. **Bills Introduced** S. Con. Res. 34 introduced by Senator Murray, Montana, proposes to create a joint congressional committee to make an investigation of the conditions in the metal miners' occupation with particular reference to silicosis and tuberculosis. H. Res. 429, introduced by Representative Conner, Massachusetts, proposes to authorize the Committee on Labor, as a whole or by a subcommittee, to investigate the health conditions of workers employed in the construction and maintenance of mining and tunneling projects, with particular reference to silicosis and other respiratory diseases. S. 4033, introduced by Senator Schwellenbach, Washington, proposes to amend the Longshoremen's and Harbor Workers' Compensation Act so as to provide that the medical and surgical care rendered under the act "shall include attendance and treatment by any physician or surgeon selected by the injured employee who resides in the same community with the injured employee and whose competency has been approved by the deputy commissioner, if the employee is not satisfied with the physician or surgeon selected by the employer." S. 4059, introduced by Senator Copeland, New York, proposes to provide medals of honor for civilian government employees for distinguished service. S. 4153, introduced by Senator Bone, Washington, proposes to provide hospitalization for certain employees in the Bureau of Navigation and Steamboat Inspection of the Department of Commerce and for licensed local pilots of the United States. S. 4181 introduced by Senator McAdoo, California, proposes to authorize an appropriation of \$375,000 to construct a new wing on the veterans' hospital at Los Angeles. H. Res. 432 introduced by Representative Daly, Pennsylvania, proposes to request the Secretary of the Navy and the Administrator of Veterans' Affairs to submit a report respecting the Naval Hospital at Philadelphia setting forth the facilities at the hospital, the extent of its use by veterans, its needs for additional facilities, and certain other relevant facts. H. J. Res. 496, introduced by Representative Randolph, West Virginia, proposes to erect a memorial to Dr. Samuel Alexander Mudd for his "heroic and invaluable medical aid to yellow fever victims." Dr. Mudd gave medical aid to the assassin of President Lincoln and was sentenced to life imprisonment at Fort Jefferson. Subsequently he received a complete and unconditional pardon. The services for which it is proposed to give recognition were rendered 'to his fellow men while being held a prisoner for a crime which he did not commit.' H. R. 11330, introduced by Representative Gassaway, Oklahoma, proposes to authorize the dissemination of information relating to the prevention of conception and articles designed adapted or intended for the prevention of conception, when sent, carried or conveyed (1) to licensed physicians for the treatment of patients (2) to licensed druggists for the purpose of filling prescriptions (3) to any legally chartered medical school for medical instruction at such school, or (4) to any legally licensed or chartered hospital or clinic for the treatment of patients in such hospital or clinic.

CANADA

Lawyer Appointed Minister of Pensions and Health—Charles G. Power, Quebec, a lawyer and a member of Parliament at various times since 1917, has been appointed minister of pensions and national health for Canada. The new minister was born in Quebec and educated in law at Laval University. He received the Military Cross for distinguished service overseas during the World War.

Society News—Drs. Walter M. Paton and Bede J. M. Harrison addressed the Vancouver Medical Association, January 7, on 'Tumors of the Head and Neck' and 'Roentgenology of Cardiac Diseases' respectively. Mr. J. W. deB. Farris

discussed medicolegal problems before the association, February 4—Dr Alvah H. Gordon, Montreal discussed "Bone Changes in Certain Medical Diseases" before the Academy of Medicine of Toronto, February 4

LATIN AMERICA

Society News—The National Academy of Medicine of Mexico recently elected the following officers: Drs. Gustavo Baz, president; Ignacio Gonzalez Guzman, vice president; Alfonso Pruneda, permanent secretary; Mario Quinones, annual secretary; and Manuel Martinez Baez, treasurer.

FOREIGN

Course in Otolaryngology—The Association of the Hospitals of Paris for Medical Instruction announces a week's course in otolaryngology to be given May 4-9, inclusive. Registrations for the course will be received up to April 15 by Dr. Louis Leroux, 242 bis Boulevard Saint Germain, Paris. Among the subjects listed are laryngoscopy, ocular nystagmus, total laryngectomy, diagnosis and treatment of cancer of the larynx, surgical treatment of ozena, petrositis, ethmoiditis, surgery of the labyrinth and osteomyelitis invading the brain.

Society News—The German Society for Tropical Medicine will meet in Hamburg June 2-3. The official journal of the society changed its title January 1 to *Archiv für Schiffs- und Tropenhygiene*.—The fifteenth session of the "Medical Days" of Brussels will be held at the Free University of Brussels June 20-24, under the presidency of Dr. Robert Danis. For information write Dr. R. Beckers, secretary general, 141 rue Belliard, Brussels.—The fourth International Congress of Pediatrics which was scheduled for this spring in Rome, has been postponed until the latter part of September, according to the *Journal of Pediatrics*.

Congress of Jewish Physicians—The first World Congress of Jewish Physicians is to be held in Jerusalem at the Hebrew University and Tel Aviv, April 21-24. The program includes reports on the situation of Jewish physicians, reports on medical education, hygienic conditions of the Jewish population in Palestine and other countries with large Jewish population, Jewish institutions for preventive medicine and sanitary service, foundation of a world union of Jewish physicians, and scientific lectures on anthropology and eugenics. For information concerning reduced rates and special facilities apply to Amalgamated Bank of New York, 1111 Union Square, New York.

Government Services

Course in Aviation Medicine

At a dinner meeting of the U. S. Naval Reserve Medical and Dental Officers' Association in New York, recently the following medical reserve officers were awarded certificates for having successfully completed the course in aviation medicine in which they were enrolled: Lieut. Comdr. William J. Fordung, Manfred J. Gerstley, Max Gratz, Abraham Jablons, Walter R. Loeve and Oscar Wald and Lieut. Lawrence A. Gerlach. The course was conducted by the medical office of the headquarters commandant, third naval district, Navy Department, and was the first of its kind to be held in the United States for naval reserve officers.

Physiologist Wanted for Air Corps Laboratory

The U. S. Public Health Service announces an open competitive examination for the position of associate research physiologist to fill a vacancy in the Air Corps, Materiel Division, Wright Field, Dayton, Ohio. The duties will be to establish equipment and operate a physiologic and biochemical research laboratory to investigate all phases of the effects of flying on the human organism. Competitors will not be required to report for examination at any place but will be rated on their education and experience. They must be citizens of the United States, must have graduated from a college or university of recognized standing with not less than twenty semester hours in physiology and must have had not less than three years' research experience in animal physiology and biochemistry. They must not have reached their forty-fifth birthday on the date of application and they must be in sound physical health. Applications must be filed with the U. S. Civil Service Commission, Washington, D. C., not later than March 30.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 1, 1936

Precautions Against Anesthetic Explosions

The number of serious accidents due to anesthetic explosions in operating rooms has so far been small but two main factors seem likely to increase them: (1) administration of ether and oxygen mixtures, which has become common, (2) the growing use of electrical apparatus close to the patient. A study of certain accidents in this country by the Ministry of Health has shown the need for precautionary measures, and after consultation with the factory department of the home office it has issued to local authorities and to health officers a memorandum, of which the following is a summary.

THE ANESTHETIC

A rich ether-oxygen mixture is more dangerous than a corresponding ether-air mixture, and a very small spark suffices for ignition. Nitrous oxide is not inflammable, but mixtures of ether vapor with air or oxygen are made more inflammable if nitrous oxide is added. Ethyl chloride yields a vapor that forms an explosive mixture with air and is dangerous in proximity to flames or apparatus likely to involve a spark and hot wires. The ordinary A. C. E. mixture may yield an explosive mixture with air and be dangerous under the conditions just mentioned. Explosions resulting from a mixture of ethylene and oxygen are very destructive.

The following methods of anesthesia are available when explosive risks may be anticipated: basal narcosis, local anesthesia, nitrous oxide, chloroform. But chloroform is not always advisable, and local anesthesia may be impracticable. Then the risk of ether may be minimized by limiting its administration to the induction of anesthesia. After an interval sufficient for elimination of the ether vapor, electrical apparatus may be used, anesthesia being maintained with chloroform or nitrous oxide and oxygen. Risk of ether explosions may be lessened by using a rigid closed circuit with carbon dioxide absorption. With a tightly fitting mask, no anesthetic should then escape into the air.

ANESTHETIC APPARATUS

In some types of apparatus it is possible for an explosive mixture containing ether to be delivered, although the valve or tap is set to admit chloroform or nitrous oxide only. This is due to evaporation combined with the slight suction effect of the gas flow and is more likely if the ether bottle is surrounded by a hot water jacket. The casual emptying of the ether bottle is not only no safeguard but a possible danger. The ether bottle should be altogether detached and not replaced until all traces of ether have been removed, or it should be fitted with an effective valve which closes the outlet when ether vapor is not required. It has been established by experiment that ether-oxygen mixtures can ignite along a tube such as that used in intratracheal administration, or in conjunction with a mask. If ignition occurs at the outlet, a flame may therefore reach the ether bottle, causing a burst with ejection of burning ether. Enclosed suction pumps should be so constructed that the exhaust delivery is outside the motor case. Otherwise in nose and throat operations the air-containing ether may be sucked in until concentration within the explosive limits is reached.

ELECTRICAL APPARATUS

It is unwise to use diathermic apparatus if ether must be administered as the cutting arc or spark can ignite ether air or ether-oxygen. A blanket or other screen between the patient's head and the point of application of the electrode is not a reliable safeguard. Further risks of ignition arise from

the spark gaps within the cabinet and from the possibility of the patient being at an electrical potential with consequent risk of sparking to the operator or other conducting bodies

In x-ray apparatus, careful construction of the electrical part and of the method of connection is essential for use in the presence of inflammable anesthetics. Sparking may occur from a defect in insulation, at switches, regulators, fan cooling motors or plug and socket connectors, the danger depending on the ventilation and proximity to the patient

Surgical lamps have to be small, which has led to a form of construction that is not robust and therefore tends to fail with use. Sparking may be caused by accidental short circuiting of exposed terminals or by failure of insulation or intermittent contact. Sparking is particularly dangerous in nose and throat operations under ether oxygen anesthesia. The danger of ignition is less with small low voltage dry cells than with other forms of supply, such as accumulators, transformers, motor generators and large dry cells. Grave risk of sparking is introduced by direct connection with public supply mains

In addition to the possibility of sparking the heat of an electrical cautery may ignite ether vapor. Ether-oxygen ignites by contact with hot metal at 300 C, which is below visible red heat

STATIC ELECTRICITY

Under ordinary conditions the atmospheric humidity in this country is sufficient to prevent dangerous static electrification but on very dry days or in rooms to which only dry warm air is admitted sparking is possible. Insulated apparatus such as rubber-tired patients' trolleys or portable anesthetic equipments can be electrified in various ways, for example, by drawing a dry blanket or towel across them. Discharge by sparking may ignite ether-oxygen mixtures. This danger can be eliminated by humidification of the air or by earthing by means of a light trailing chain from trolley metal work to the floor. Ventilation is an effective means of preventing anesthetic explosions

ANESTHESIA ACCIDENTS

The following accidents recently occurred in this country

1 During an operation for dilation of a cancerous growth of the esophagus, while the surgeon was withdrawing a small surgical lamp an explosion occurred in the patient's mouth and also at the anesthetic apparatus, which burst into flames. The oxygen stream through the ether bottle had been stopped and the litter had been set to deliver chloroform and oxygen. It was found that some ether might have been drawn from the open delivery side of the bottle to join the main current of oxygen and chloroform

2 While anesthetic equipment on a rubber-tired vehicle was being pushed alongside a similarly tired patient's trolley an explosion occurred, injuring both patient and anesthetist. The air supply was treated and delivered by a ventilating plant and consequently was of low humidity. It was found that the insulated trolleys could be readily electrified by sharp movements of blankets. This possibility is now obviated by trolley chains

3 A diathermy operation was in progress for carcinoma of the epiglottis. Intratracheal chloroform anesthesia was used but the anesthetist thought it desirable to change to ether. An explosion occurred when the diathermy electrode was in the mouth. Some of those present were injured by the flying glass, and the patient subsequently died

Inadequacy of Precautions Against Poison Gas

It seems to be past the wit of man to provide adequate protection against one of the latest developments of civilization—the bombing of cities with poison gas. In a press interview Sir Gowland Hopkins the president of the Royal Society and our leading biochemist says: "If people are led to believe that gas masks alone will give protection they will be given a sense

of false security. It would at least be necessary to provide suits. The enormous cost would be prohibitive.' He has in mind poisons such as mustard gas, which penetrate ordinary clothing and attack the skin. He adds: "The growing tendency in official quarters of this and other civilized countries to accept the use of aircraft for unrestricted bombing and gas attack on civil populations is dangerous. The only defense is to abolish this form of warfare. The danger is that the public may be led to believe that science can give them complete protection." With the continued improvement in incendiary bombs, the fire peril grows greater. Some of the latest of these missiles, though more effective than ever, now weigh only about a pound. One small plane can carry hundreds. They burn with the intensity of magnesium and explode if water touches them. It is claimed that whole cities could be dotted with fires in a few minutes. It is impossible to look at the blaze from these bombs with the naked eye.

Tests with babies are being made by designers of the antigas containers which the government will distribute to parents in the event of another war. It was necessary to discover how an infant would react to varying air pressures. This was done by placing a baby in the container and observing its breathing. Poison gas of course, was not used in the experiment. Experts have not yet been able to discover how to save a baby from suffocation if the parents working the pump that supplies air to the container are killed or disabled.

Murder by Plague Bacillus

In a previous letter to THE JOURNAL the case was reported in which a rich landowner of Pakur, in the province of Bihar, India, received a prick from an unknown man at a railway station in November 1933 and became ill and died. It was subsequently found that his stepbrother had tried to obtain a culture of the plague bacillus at the Haffkine Institute, Bombay, and that when he failed an Indian physician obtained one by representing that he wanted it for research. The stepbrother also appeared to have made a previous attempt of the kind on the life of the deceased. Both men were charged with conspiracy to murder, and they were convicted and sentenced to death. The case has just come before the high court of appeal which commuted the sentence to transportation for life. The appeal bench observed that the case was unique in the annals of crime. The court commuted the sentence in view of the circumstantial nature of the evidence but held that the only reasonable inference was that the two men conspired to murder the deceased, for which purpose they provided some person or persons unknown with the plague obtained in Bombay, who at their instigation succeeded in infecting the victim. Part of the reason for commuting the sentence was that this course might lead to the discovery of the actual perpetrator of the crime.

Precautions Against Carbon Bisulfide Poisoning

The factory department of the government has issued a memorandum on precautions against poisoning, fire and explosions that may occur in the use of carbon bisulfide in artificial silk, india rubber and other manufactures. Poisoning arises from the inhalation of small quantities of the vapor over periods of weeks or months. The first symptoms are nausea, indigestion, giddiness and hysterical disturbances. Other symptoms are an appearance of anxiety with sweating of the hands and forehead. In the next stage there is impairment of memory, mental dulness and depression. Speech may be affected with contraction of the visual fields and diminished power of accommodation. Toxic neuritis may manifest itself by muscular weakness, first in the muscles of the face and flexors of the forearm. Difficulty in walking leads to paralysis. Late symptoms are tremor, paresthesia, loss of sensibility and optic neuritis.

Carbon bisulfide poisoning in factory or workshop is compulsorily notifiable. Since 1924, eighteen cases have been notified in this country. Among the precautions laid down for prevention is the medical examination of workers at intervals not exceeding one month. The storage and pipe conveyance of carbon bisulfide must be satisfactory and explosions must be guarded against.

PARIS

(From Our Special Correspondent)

Feb 25, 1936

Meningitic Forms of Icterohemorrhagic Spirochetosis

Mollaret, of the Institut Pasteur, read three papers before the Societe medicale des Hopitaux de Paris on meningitic infection by *Spirochaeta icterohaemorrhagica*.

A fisherman in Seine came to the hospital with meningitic symptoms and in a few days had serious cardiorenal complications. The first lumbar puncture showed a normal spinal fluid, but the second made on the sixth day, showed a meningitic reaction. The patient died suddenly on the seventh day from heart failure. Postmortem examination proved the spirochetic nature of the disease. The second patient was a garage man in a garage infested by rats. The spirochetic infection was not less authentic, but in this case the lumbar puncture revealed directly the meningitic condition. This was the only evidence of a spirochetic complication, in the lack of any clinical symptom. The disease was principally a generalized icterus with azotemia and albuminuria.

In their second paper, Mollaret and his co-worker Berthe Erber discussed the diagnosis of meningitic spirochetosis. The presence of the spirochete cannot be found in the spinal fluid. The spirochete is difficult to find in the urine, and as for inoculation in the rabbit, one can always suspect some attenuation of its virulence in the course of research. Best is serodiagnosis. Among the different technics the authors prefer the Martin and Pettit method, which involves agglutination of a virulent culture of spirochetes in increasing quantities of studied serum dilutions. A difficult question is the so called zone action of agglutination. Agglutination never appears before the 1:10 dilution and is not actually seen in most cases before higher dilutions, 1:100, or even 1:500 or 1:600. As a matter of fact, the positive tests always include the absence of agglutination in the first low dilutions. On the other hand, the meningitis being just an atypical form of spirochetosis, one may question the lack of causality between positive tests of spirochetosis and actual meningitic symptoms. The positive tests could include evidence of some former infection, not necessarily connected with the present infection. The authors answer the objection, pointing out that other spirochetes or other stocks do not show this absence of agglutination with low dilutions which is characteristic of *Spirochaeta icterohaemorrhagica*. The morphology of agglutination allows some differentiations between the latter and the former.

In the third paper Mollaret turned his attention to the physiopathologic sides of meningitic spirochetosis. In such cases, instead of a simple and ordinary propagation of the spirochetal infection to the meninges, from outside to inside the whole disease seems to develop as in a closed vessel in the interior of the meninges. Apropos of such cases contamination by the ethmoid was suggested in infested rivers, or by conjunctivitis and the problem was that of permeability or nonpermeability of the agent from inside the meningitic sac to the outside. From study of the meningitic permeability to fuchsin comparison between blood and spinal fluid agglutinins, and from some experiments on monkeys the authors conclude that the reactions in the two diseases are identical. The pure spirochetic meningitis is consequently of the same value as any other visceral determination no matter what kind of spiro-

chetes are involved, as the cause of the ailment. As they themselves admit, these views are hypothetical and many questions remain unsolved.

American Memorial Hospital in Reims Enlarged

In 1925 Ambassador Merrick laid the first stone of the American Memorial Hospital in Reims, one of the most sorely tried of the French cities of the East. The funds, all of American origin, were given by many benefactors and organizations. The chairman of the corporation was, and still is, Miss Edith Bangs, the medical director is Dr. Marie Louise Lefort. The building, located in the suburbs of Reims, is a large one, with a pretty garden relieving the plainness of the exterior, and it dominates the surroundings, which are rather severe. The medical facilities are adequate to supply medical and surgical care to 112 children from birth to 14 years of age. The founders were apparently a bit too optimistic. They combined with the hospital a nurse school and to make room for the student nurses were obliged to lower the number of occupied beds. When some repairs were needed on the walls and roofs last year, one floor was added and the initial number of 112 beds installed. Happily, some funds remained free from the first gifts, which were good dollars and had fructified steadily over many years. They were sufficient to complete the building and the American Memorial Hospital of Reims is now at its full extent. The names of the benefactors, mostly American are piously engraved on the pleasant walls of the hospital.

BERLIN

(From Our Regular Correspondent)

Jan 20, 1936

Traumatic Epilepsy in Ex-Service Men

The follow-up examination of brain injuries over a period of twenty years became possible to Dr. Baumeier, who in his official capacity has examined war veterans of the Dresden district presenting brain injuries. Under brain injury cases the Dresden welfare bureau for disabled veterans classifies men who have suffered direct brain injury even when no noticeable results of the injury were apparent, men whose injuries were followed by neurologic and psychic disturbances and veterans presenting traumatic epilepsy as a result of such injury. Men whose injuries were confined to the cranial bones or the dura were not so classified. The following were the principal symptoms presented by the men with brain injuries: uniform headaches markedly dependent on the weather, attacks of vertigo, slight irritability, increased susceptibility to mental fatigue and troubled sleep. Baumeier made follow-up examinations of 340 such cases in recent years. The most important fact noted from these examinations was the progressive deterioration manifest in many cases. This took a quite different course in various cases. Mental deterioration was more frequent than local phenomena, aphasia or dementia paralytica. Of the men with brain injuries undergoing follow-up examinations, 24 per cent presented traumatic epilepsy of the grand mal type, in a few cases jacksonian type convulsions without loss of consciousness were observed. Cases of absolute unconsciousness were infrequent. A prolonged state of stupor is as rare in traumatic epilepsy as are dementias, which may be observed in true epilepsy. The interval between brain trauma and the appearance of traumatic epilepsy varies greatly from more than eighteen years to only a few weeks. Heretofore not enough attention has been paid to mental deterioration without traumatic epilepsy. All stages are possible in these cases, from the mildest anemic disturbances to the most severe types of dementia. The men complain but little and show themselves negligent of their own interests. It is their relatives who first urge pension increases, medical treatment and so on. The condition of traumatic dementia although multiform almost always shows a diminution

tion of the power of judgment and increasing irritability the spheres of interest become greatly restricted. A further type exists in which the frontal brain has been injured; this is characterized by a great weakness of impulse, inordinate optimism and a permanent dazed condition without loss of consciousness. Fatal cases of purulent meningitis were also registered. On the other hand, some severe brain injuries had no consequences. When the injury was to the cranial bones, the patients had fewer headaches. Administration of a huge amount of narcotics was necessary, often in large doses. Traumatic epilepsy may be treated like true epilepsy but with less success.

Herpes Simplex

The etiology of herpes simplex has yet to be explained. Prof. Otto Naegeli, the Bern dermatologist, recently lectured on the subject before the Munich Medical Association. Herpes should be classed among infectious diseases even though it does not possess various characteristic indications. Naegeli has successfully accomplished transmissions of herpes, but proofs of person to person transmission are as yet lacking. Herpes would seem to be a defense mechanism of the human organism. It has a definite location and appears again and again in the same manner in some particular favorite place, as on the mouth and nose. The virus thus seems to be restricted to a certain locality. It may also have its site in the region of the anus or on the skin of the face. Incontestable infection by contact has not yet been observed. Whether or not a febris herpetica actually exists is still debatable. The assertion that febrile diseases may take a course favorable to the simultaneous appearance of herpes is based on experience in practice. Familial appearances of herpes have been repeatedly observed. Herpes may attack in many different manners. Children up to 5 years of age are seldom if ever attacked. Herpes chiefly occurs during the period from the middle of the second decade to the middle of the third. It is frequently encountered with epidemic meningitis. According to experience, whenever herpes makes its appearance in severe diphtheria the latter disease will run a much milder course than if herpes is absent. The same holds true for metasyphilis with the exception of tabes. Likewise in malaria therapy, Naegeli has learned by experience that better therapeutic results (speedier destruction of the nonmotile spirilla, symptomatic improvement) may be observed coincident with eruptions of herpes.

Instruction in Technical Hygiene

According to a recent ministerial order, instruction in technical hygiene (medical care in accident and occupational disease cases) is to be introduced as a subject of study. Moreover, the ideal sought is that no special lectures need be given but rather that this field may be completely divided up, each professor treating in conjunction with his regular lectures such aspects of the subject as pertain to his own field.

Prof. Ludwig Aschoff 70 Years Old

The eminent professor of pathologic anatomy of the University of Freiburg in Breisgau celebrated his seventieth birthday January 10. Aschoff has always recognized those fundamental principles of Virchow, which time and increased knowledge have done much to develop. Aschoff's work embraces nearly all fields of general pathology and pathologic anatomy. He will probably be chiefly remembered for his contributions on thrombosis and on nephritis and for his studies on the origin of inflammations. His entrance into a discussion always adds something of value even when he evokes opposition. In the preface to his textbook of pathologic anatomy, Aschoff expresses himself as follows: 'Let there be but one opinion and you have an end of research and knowledge.' Already in his first major endeavors in the field of pathologic morphology, Aschoff strove for a better comprehension of the pathologic processes and of the causes and nature of symptoms. Among his many

other achievements was his explanation, in collaboration with Tawara, of the bundle of His and his work on pulmonary tuberculosis, on the functional organization of the stomach, and on the reticulo-endothelial system. He has made it possible to formulate a general theory of disease. He constantly has explored the connecting links between his own and other fields and in this way has gained a knowledge of new methods and trends that might be applicable to his own narrow specialty. One has only to recall, for example, his work with cholesterol. Hand in hand with his manifest ability as a scientist go a lively technique of presentation and an extraordinary mastery of language, gifts all of which combine to place the name of Aschoff among the most illustrious in his field.

BELGIUM

(From Our Regular Correspondent)

Jan 27, 1936

Congress of Psychiatry and Neurology

The thirty-ninth session of the Congress of Alienists and Neurologists of France and French speaking countries was held at Brussels. Among the subjects discussed were (1) hysteria and the psychomotor functions and (2) hysteria and the thalamencephalic functions. Mr. Paul Vervaeck discussed juvenile delinquency and criminality, pointing out that among the etiologic factors in juvenile delinquency the family milieu is important. Research undertaken in America and confirmed in Belgium shows that delinquency tends to have as its foci certain quarters and street corners that are nests of criminality. The influence of the youthful gang or that of individual pals cannot be underestimated; also the role of the cinema remains one of the most debatable questions. To cope with juvenile delinquency an extensive array of well equipped institutions and efficient procedures is requisite: liberty under surveillance, semi-liberty at home, placement away from the family, private detention homes, public detention homes, institutions for acute psychopaths and the mentally debilitated. In each of these procedures the cooperation of the psychiatrist is necessary. He is able to imbue efforts at readjustment with a sense of individual orientation. Such efforts presuppose an efficient personnel and a meticulous classification of the children. The Belgian rehabilitation homes furnish a fine example of what may be attempted in this field. Preventive measures in juvenile delinquency must not rely too much on purely medical disciplines or on eugenics. The best prophylaxis based always on a good mental hygiene, should consist of such measures as enlightenment of ignorant parents, better orientation of school children showing criminal predispositions, the best possible program of work and recreation for adolescents. Children of abandoned morals should, on the authority of a magistrate of the juvenile court or others having tutelary jurisdiction, be committed to a private institution or perhaps with better results to those public or semipublic organizations the ramifications of which are to be found everywhere. Each of these steps in the prevention and treatment of delinquency opens up a wide field of activity for the psychiatrist.

Cancer in Slaughtered Animals

After an interchange of correspondence between Mr. Hautekeer, vice president of the Federation of Animal Protection Societies of Belgium, the minister of agriculture and the minister of the interior and of hygiene, it was decided that an investigation of cancer in slaughtered animals be launched at the Royal Medical Academy of Belgium, first by gathering information from the directors of the country's principal abattoirs and secondly by requesting that these directors make a collection of such tumors as might be encountered in the course of their examinations and send them to the department of pathologic anatomy of the School of Veterinary Medicine. In

a year the slaughterhouse officials sent in fourteen shipments containing twenty-four selected specimens (four horses, eight head of cattle, one pig). Of these specimens only six were tumors, the remainder had to do with tuberculosis. Mr. Antoine, who reported on this question, has likewise attempted to collect tumors found in draft or farm animals. He was able to obtain only six specimens (four from horses, two bovine). For his part, Dr. Willems, director of the Laboratory of Veterinary Inspection, could collect data on a few rare cases of cancer in slaughtered animals. According to statistics compiled in several foreign countries, cancer seems to be rare in bovine creatures but of course the fact remains that as yet these statistics are of but approximative value. In Belgium, examination after slaughter is required by law. The conditions under which total condemnation of a carcass is justified, however, possess no indication relative to cancer. General melanosis alone calls for total condemnation. In cases of partial condemnation, it is merely a question of condemning affected parts rendered unfit to be eaten by reason of injuries, abscesses, cysts, calculi, parasites or chronic deterioration (as of a visceral organ). Nor in dealing with these cases does the law make the slightest reference to cancer. Mr. Antoine requested that "tumors be made mention of in those sections of the law which govern partial condemnation, and furthermore that the sections governing total condemnation should no longer refer to general melanosis but rather to generalized tumors or tumorous changes in certain organs. The prevalent opinion resulting from the discussion was that, considering the present state of our knowledge of cancer, it is important that the statute be amended to provide for a closer examination of meats destined for consumption and to prohibit sale in case of tumorous conditions, which certainly must be more frequent than existing statistics would lead one to believe.

ITALY

(From Our Regular Correspondent)

Jan 15, 1936

Medicine Pertaining to Sport

The Società di Medicina Sportiva met recently at Bologna under the chairmanship of Prof. Ugo Cassinis. Prof. Giovanni Pini of Bologna spoke on sport medicine in Italy. Sport medicine has developed greatly in Italy during the last few years. The number of practitioners in this branch of medicine is 2,000. Italian universities have made it their duty to provide sport physicians trained by competent teachers. Societies pertaining to sport medicine are obliged to employ the services of sport physicians. As a basis for the evaluation of the physical constitution of athletes in collecting international data, Viola's method of anthropometric-morphologic and physiologic measurements has been universally accepted since its verification at the congress held in Chamonix in 1934. The establishment of a university center for research in sport medicine has been suggested. Pini believes that better results would be obtained from the establishment of various regional centers located in state capitals.

Professor Cassinis studied accidents caused by athletics in the first year that the insurance branch, Cassa di previdenza, was in operation. Of 97,489 insured athletes there were 2,177 cases of traumatic injuries; the greater number of which occurred during football. According to the number of athletes who participate in athletics in relation to the number of accidents that occurred, the following percentages were obtained: accidents caused by English rugby (football), 9.90 per cent; boxing, 4.18 per cent; 'heavy weight' athletics, 4.14 per cent; and football, 3.70 per cent. Mountain climbing gave a low percentage, 0.42 of accidents during the year, but the number of deaths was high (eighteen). The location of traumatic lesions varies with the sports and is typical for each group of sports especially for football, boxing and cycling. For all sports taken

together, contusions, distortions and fractures predominated. Among 2,177 accidents that occurred, permanent disability, either partial or total, was produced in 481 cases, or 22.04 per cent. The high percentage of accidents is due to the manner of playing the games and depends on the training of the players and on the application of the fundamentals during actual playing. In the groups of athletes of universities, more than 125,000 athletes were insured. Traumatic lesions occurred in only ninety-four cases of the group, resulting in permanent disability in three cases.

Professor Tranquilli made a statistical study of trauma caused by sport during the last five years and reviewed the 800 cases reported.

Professor Donaggio spoke on the Donaggio reaction and of its value as a test of fatigue. He stated that the obstruction phenomenon observed in the urine following physical exertion is a manifestation of a general reaction of the organism to intense muscular work and that it is more sensitive than the modifications of both the velocity of speed of the erythrocytes and of Arneith's formula.

Castellani in Military Service in Africa

Dr. Aldo Castellani, director of the clinic of tropical diseases at the University of Rome, has been appointed head of all the medical services, both military and civil, in Italian East Africa. Steps have been taken under his direction to prevent the appearance and spread of infectious diseases. All centers of military activities are provided with abundant supplies of water made potable by purification and filtration. Soldiers are given vitamins to complement their rations. They are provided with day clothing and wool covers to protect them against the changes of temperatures. Bacteriologic laboratories, centers for isolation of patients, have been established. Care is given to the early detection of infectious diseases, disinfection, disinfection of places and betterment of the health conditions of camps and prisons. The network of sanitary centers includes military hospitals in connection with hospitals in Asmara and Massowah and with hospital ships, one of which is stationed in the port of Eritrea. Hospitals for convalescents, ambulant departments with experts for roentgen and dental work, auto mobile ambulances and railroad cars provided with equipment for sanitary work are all units of the sanitation of the colony which has been organized during the present military activities.

VIENNA

(From Our Regular Correspondent)

Jan 18, 1936

Psittacosis in Vienna

At the last session of the Vienna Society of Physicians, a woman patient from the clinic of Professor Eppinger was presented whose illness had been at first diagnosed as pneumonia. At the time of her admittance, despite quite trifling objective symptoms, the patient appeared severely ill. The localized nature of the pneumonic development aroused a suspicion of psittacosis, all the more as the patient had kept in her home two zebra-parakeets, one of which had sickened and died. Twelve days after the onset of the illness, samples of sputum were sent to the federal institution for campaigning against diseases of animals, where a diagnosis of psittacosis was made. It is noteworthy that in this case for the first time the director, Professor Gerlach, succeeded in culturing the typical causative agent of psittacosis in the blood serum as well as in the sputum. The patient, although nearly recovered, remained in quarantine. In the meantime the second bird had died and it was also found to have been infected. Thereupon the bird store which had sold the pets was investigated and an examination of the living parakeets in stock revealed a whole series of disease carriers. The store's entire stock of 146 birds, including zebra parakeets

canaries, wood birds and two birds of paradise was ordered destroyed. Examination of the 146 bird cadavers showed infection to be present in a large majority. Professor Eppinger who observed an epidemic of the disease in the Rhineland some time ago stated that the wandering of the pneumonic focus such as had aroused suspicion in this Viennese case is a characteristic symptom. The discrepancy between the severity of the symptoms and the meagerness of the objective signs is also typical. Professor Gerlach, who like Eppinger, also was in his time a member of the commission for the campaign against psittacosis emphasized that not only parrots but also canaries can be infected with the disease and in turn become carriers. When, however canaries have had no contact with diseased birds that is to say when they come from domestic breeding places, they are (and the same applies to home-bred as distinguished from imported parakeets) not dangerous. Caution should, however be exercised with regard to such birds. Several times in the past year breeders of zebra-parakeets were stricken with pneumonia—one case ending fatally—without psittacosis being proved. Frequently small epidemics break out in seaports where sailors occasionally bring in infected parrots. Under such circumstances the disease is neither quickly recognized nor checked. Therapeutic measures in cases of psittacosis in man are at present only symptomatic. The mortality in epidemics observed fluctuated between 5 and 30 per cent.

The Campaign Against Hereditary Disease

In the course of a series of papers on "The Science of Heredity and Race" Prof Julius Bauer spoke anew on "The Significance of Heredity in Man." This scholar an acknowledged authority in the field has reiterated his opinion that the theory of race as promulgated by the present rulers of Germany is based on false premises and leads to false conclusions. Dr Bauer's views have made him hated by Nazi officials. The German delegations were forbidden to participate in the International Congress of Internists in Switzerland in 1935 unless Dr Bauer was excluded. The Swiss convention was forced to yield to this pressure (or extortion) and to request that Dr Bauer withhold his paper. In his latest lecture this scholar stresses the great significance of the proportions assumed in the last few years by the movement for a humanitarian application of man's knowledge of genetics. Particularly in Germany, legislation has been attempted which seeks to exercise preventive control of the aftergrowth of tainted heredity and which therefore authorizes the sterilization of insane persons and others classed as burdensome to the state. Sterilization of these persons is, however as Bauer emphasizes no adequate way to protect the humanity of the future from those who come into the world with a congenital disease. The only result of such sterilization is that a negligibly small number of persons is prevented from propagating. But at least 75 per cent of all living human beings possess pathologic inherited predispositions consequently since only some 25 per cent are free from such predispositions, the German legislation can never accomplish its professed purpose the improvement of the race. It would be necessary to carry out this sterilization through from thirty to fifty generations. Moreover it is a matter of common knowledge that many persons unwittingly possessing pathologic hereditary predispositions have made valuable and even great contributions to the cultural development of their race (among others Beethoven Spinoza Mendelssohn Nietzsche Mohammed Napoleon). Important results have been yielded by studies of the vital processes of uniovular twins. The physical development as well as the mental (criminal type) of such twins takes place simultaneously in a perfectly homogeneous manner. Their fingerprints too are almost identical and the same holds true for their endowments and aptitudes.

Marriages

- ADOLPHE P. DELCOURT Hammond Ia to Miss Marion Weston of St Francisville in New Orleans Dec 12 1935
CHARLES WALTON PURCELL University Va to Miss Cleo Virginia Ashby in Raleigh N C January 18
ROBERT P. JEANES Casley S C to Miss Martie Helen Nelson at Spring Grove, Minn Nov 23 1935
EDWARD SINTON CARDWELL JR to Miss Lily Mikell Legare both of Columbia S C Nov 29 1935
ARTHUR B. DE GRANDIERE, Plattsburg N Y to Miss June Ann Byrne in New York January 11
BASIL L. MURRELL Waretown Ind to Miss Elva L. Ross of Indianapolis, Nov 28 1935
CARL A. BISGARD Harlan Iowa, to Miss Constance Lamar of Sioux City January 25
HUBERT GROS to Miss Jean Kramer both of Delphi Ind, in Franklin, Oct 17 1935
ALDRA D. JAMES, Des Moines, Iowa to Miss Bernice Nelson of Wilton January 12

Deaths

Southgate Leigh ♂ Norfolk Va University of Virginia Department of Medicine Charlottesville 1888 College of Physicians and Surgeons, Medical Department of Columbia College New York, 1889, member of the House of Delegates of the American Medical Association 1916 1933 past president of the Tri-State Medical Association of the Carolinas and Virginia Seaboard Medical Association Atlantic Coast Line Railway Surgeons Norfolk and Western Railway Surgeons Association Chesapeake and Ohio Railway Surgeons Association Southern States Association of Railway Surgeons Norfolk County Medical Society and the Medical Society of Virginia a founder governor and fellow of the American College of Surgeons member of the Southern Surgical Association, founder visiting surgeon and gynecologist Sarah Leigh Hospital consulting surgeon to the Norfolk Memorial Hospital in 1929 awarded the Distinguished Service Medal for the best civic work aged 69 died March 5 of cerebral hemorrhage

Charles Warren Hooper, New York Johns Hopkins University School of Medicine Baltimore, 1914 an Associate Fellow of the American Medical Association member of the Associated Anesthetists of the United States and Canada at one time fellow and assistant professor of research medicine Hooper Foundation instructor and assistant professor of research medicine University of California Medical School and the Hooper Foundation San Francisco for three years pathologic physiologist at the Hygienic Laboratory U S Public Health Service Washington D C formerly passed assistant surgeon in the reserve corps U S Public Health Service, director of research medicine for the H A Metz Laboratories and the Winthrop Chemical Company Rensselaer N Y aged 45 died January 27 in St Peter's Hospital Albany, of pneumonia

Henry Patterson Bagley ♂ Galesburg Ill College of Physicians and Surgeons of Chicago School of Medicine of the University of Illinois 1905 at various times associate and instructor in laryngology and otology Rush Medical College Chicago and assistant professor of ear nose and throat diseases at Loyola University School of Medicine Chicago served during the World War formerly on the staffs of the Chicago Eye Ear Nose and Throat Hospital St Mary's of Nazareth Hospital and the Illinois Charitable Eye and Ear Infirmary, Chicago aged 59 on the staff of the Galesburg Cottage Hospital where he died February 8 of pneumonia

William Burton De Garmo ♂ Coral Gables Fla, University of the City of New York Medical Department 1875 member of the Medical Society of Virginia professor of special and clinical surgery New York Post Graduate Medical School and Hospital 1888 1918 and since 1918 consulting surgeon, fellow of the American College of Surgeons captain in the medical reserve corps in 1917 author of "Abdominal Hernia—Its Diagnosis and Treatment" 1907 aged 86 died January 3, as the result of a hip fracture received in a fall

William Henry Wenning, Cincinnati Miami Medical College Cincinnati 1871 at one time clinical professor of gynecology at his alma mater, professor of obstetrics at the Woman's Medical College and the Cincinnati Medical College for many

years president and member of the staff of St Mary's Hospital at one time president and secretary of the Cincinnati Academy of Medicine, aged 85, died, Dec 25, 1935, of angina pectoris and coronary occlusion

Lyne Arthur Hoag, Barrington, R I, University of Michigan Medical School, Ann Arbor, 1918, associate professor of pediatrics, Cornell University Medical College, New York at one time instructor in pediatrics and infectious diseases at his alma mater, assistant professor of anatomy Vanderbilt University Medical Department Nashville Tenn and assistant in pediatrics, Harvard University Medical School, Boston aged 43 died, February 16

Frederick McDonell Harkin ♂ Marquette Mich McGill University Faculty of Medicine, Montreal, Que Canada 1885 fellow of the American College of Surgeons past president of the Upper Peninsula Medical Society health officer of Marquette attending surgeon to St Mary's and St Luke's hospitals, aged 72, died, January 23

Frederick August Baumgart ♂ Danville Ill College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904, past president of the Vermilion County Medical Society on the staffs of the Lakeview Hospital and St Elizabeth Hospital, aged 61, died January 15, of angina pectoris

Harvey Bradley Gratiot ♂ Dubuque, Iowa Jefferson Medical College of Philadelphia, 1896, past president of the Dubuque County Medical Society, fellow of the American College of Surgeons served during the World War on the staffs of the Finley and Mercy hospitals, aged 61 died, January 13, of pneumonia

Gilbert B Pfoutz, Salt Lake City University of Pennsylvania Department of Medicine, Philadelphia, 1888, member of the Utah State Medical Association, fellow of the American College of Surgeons, member of the consulting staff of St Mark's Hospital aged 71, died, January 2, of chronic nephritis

Howard Frum Hubbard ♂ Rome, N Y University of the City of New York Medical Department 1887 county coroner for many years president of the board of managers of the Oneida County Hospital, aged 67, on the staff of the Rome Hospital, where he died, January 1 of coronary thrombosis

Edward A Travis, Como Tenn, University of Louisville (Ky) Medical Department, 1881, past president of the Henry County Medical Society formerly member of the state legislature and county board of education, aged 75, died, Dec 28 1935 in a hospital at Paris, of bronchopneumonia

Thomas Charles Phillips, Milwaukee University of Michigan Department of Medicine and Surgery, Ann Arbor 1887 formerly professor of ophthalmology and otology and dean Wisconsin College of Physicians and Surgeons, aged 76, died, January 4, of carcinoma of the prostate

Daniel Oscar Willis, Leesville La Memphis (Tenn) Hospital Medical College 1904, member of the Louisiana State Medical Society, served during the World War, aged 60, died Dec 23, 1935 in a hospital at LeCompte, of injuries received in an automobile accident

Maurice Albert Stark, Newington, Conn Dartmouth Medical School Hanover, N H 1897, member of the New Hampshire Medical Society, served during the World War, on the staff of the Veterans Administration Facility, aged 61, died Dec 29, 1935

Wilson Boyd Cathcart, Pittsburgh Western Pennsylvania Medical College Pittsburgh, 1888 member of the Medical Society of the State of Pennsylvania, aged 70, died, January 10 in the Hillview Farms Sanitarium, Washington, Pa, of lobar pneumonia

Tully Joseph Liddell ♂ Surgeon, U S Public Health Service Chicago Tulane University of Louisiana Medical Department New Orleans 1912, aged 49 executive officer of the U S Marine Hospital, where he died, Dec 1935, of coronary thrombosis

William Josephus Robinson ♂ New York University of the City of New York Medical Department 1893 author of numerous books on sex and urologic subjects, aged 66 died January 6, of essential hypertension and coronary artery thrombosis

Bert William Babcock, Grand Rapids, Mich St Louis University School of Medicine, 1903 member of the Michigan State Medical Society on the staff of the Michigan Soldiers Home aged 56 died suddenly January 8, of aortic insufficiency

John Pomfret Long, Sheffield Ala, University of Virginia Department of Medicine, Charlottesville 1907 member of the Medical Association of the State of Alabama, served during the World War aged 59, was found dead, January 4

William Russell Callen, Birmingham, Ala Tulane University of Louisiana School of Medicine New Orleans, 1903, member of the Medical Association of the State of Alabama, aged 58, died, January 29, of ruptured gastric ulcer

Charles E Colwell ♂ Aurora, Ill, Hahnemann Medical College and Hospital, Chicago, 1885, past president of the West Aurora School Board, on the staff of the Copley Hospital, aged 71, died, January 10, of angina pectoris

Edward Shafer Wendt, Toledo, Ohio, Miami Medical College, Cincinnati, 1902, served during the World War, on the staff of St Vincent's Hospital aged 59, died, Dec 31, 1935 of cardiorenal disease and rectal abscess

N A Jenkins, Columbia, S C, Leonard Medical School Raleigh, 1908, superintendent of the Waverly Fraternal Hospital aged 55, died Dec 22, 1935, in the Peter Bent Brigham Hospital, Boston, of myeloid leukemia

Arthur R Mattingly, New Orleans, Tulane University of Louisiana Medical Department, New Orleans, 1887 at one time member of the state board of health, aged 71, died, Dec 22, 1935 of chronic myocarditis

Frank Petty Hixon, Pensacola, Fla, Vanderbilt University School of Medicine, Nashville Tenn, 1898, served during the World War, aged 61, died, January 4, of chronic myocarditis and cardiac decompensation

Lewis B Hoagland, Oxford, N J, University of Pennsylvania Department of Medicine, Philadelphia, 1880, member of the Medical Society of New Jersey, aged 77, died, January 9, of chronic myocarditis

William F Stewart, New Martinsville, W Va, Jefferson Medical College of Philadelphia, 1881, formerly a druggist, aged 76, died Dec 27, 1935, of mitral stenosis and chronic pulmonary tuberculosis

Louis Rominger, Ann Arbor, Mich, Louisville (Ky) Medical College, 1899, member of the Michigan State Medical Society, aged 76, died, January 2, in the Harper Hospital, Detroit, of carcinoma

Kiyoshi Matsumura ♂ San Francisco, University of California Medical School, San Francisco, 1928, aged 47, died January 5, of tuberculosis of the lumbar spine, arthritis and multiple infections

Sumner J Ricker ♂ Aurora, Ill, Hahnemann Medical College and Hospital, Chicago, 1871, College of Physicians and Surgeons of Chicago, 1891, aged 88, died suddenly, January 4, of heart disease

Malachi R French, Evansville, Ind, Pulte Medical College Cincinnati, 1880 on the staff of the French Hospital, aged 77, died, January 7, in St Mary's Hospital, of coronary thrombosis

Stephen Edward Ulmer, Cleveland, Jefferson Medical College of Philadelphia, 1896, aged 67, died, Dec 30, 1935, in the Grace Hospital, of chronic nephritis, arteriosclerosis and myocarditis

George W Richardson, Westpoint, Va, Medical College of Virginia, Richmond 1880, aged 76 died, Dec 28 1935, in the Johnston Willis Hospital, Richmond, of cerebral hemorrhage

Hubbard McKee Hoyt, Pacific Grove Calif, Chicago Homeopathic Medical College, 1886, aged 77, died, January 3 of paralysis agitans, Parkinson's disease and bronchopneumonia

Astus S Magee, Pensacola, Fla, Louisville (Ky) National Medical College, Medical Department State University, 1910, aged 57 died, January 8, of malignant neoplasm of the bones

John Oliver Nichols, Ftowah, Tenn Tennessee Medical College, Knoxville 1894 member of the Tennessee State Medical Association, aged 64, died, Dec 31, 1935, of pneumonia

Myron G Spawn, Beloit, Wis, Hahnemann Medical College and Hospital Chicago, 1890, formerly health officer of Beloit aged 73, died, Dec 23, 1935, of Parkinson's disease

George Patrick Morris, Boston Harvard University Medical School, Boston, 1891 member of the Massachusetts Medical Society, aged 75, died, January 4, of cerebral thrombosis

Peter Stewart ♂ Royal Oak Mich, University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891, aged 66 died January 2, of coronary sclerosis and thrombosis

Isabel Haslup Lamb, Washington, D C, Howard University College of Medicine, Washington, 1897, aged 71, died, January 18, of coronary occlusion and chronic myocarditis

Joseph W Eargle, Chapin, S C, Medical College of the State of South Carolina, Charleston, 1874, aged 88, died, January 4, in the Baptist Hospital, Columbia, of pneumonia

Haynes Brinson, Kissimmee, Fla., Atlanta (Ga.) College of Physicians and Surgeons 1912, member of the Florida Medical Association, aged 52, died, January 7, of myocarditis

Cecil S Hudson, Rosebank, N. Y. Baltimore Medical College, 1905, since 1921 acting assistant surgeon, U. S. Public Health Service, aged 57, died, Dec. 27, 1935

Frank F. Finch, Cleveland Heights, Ohio, Cleveland University of Medicine and Surgery, 1895, aged 63, died, Dec. 29, 1935 of chronic nephritis and myocarditis

Vincent Joseph Noone, Indianapolis, Indiana University School of Medicine Indianapolis, 1931, aged 29, died, January 4, in St. Vincent's Hospital, of pneumonia

William James Burden, Rochester, N. Y. Trinity Medical College, Toronto Ont. Canada, 1895, aged 67, died, January 10, of myocarditis and diabetes mellitus

Henry Wendell Colborne, Wingham Ont. Canada, Western University Faculty of Medicine London, 1922, aged 42, died suddenly, January 28, in Toronto

Thomas Moran, Biddeford, Maine Vanderbilt University School of Medicine, Nashville, Tenn., 1903, aged 76, died, January 3, of cerebral hemorrhage

Hiram Knox Butler, Summit Miss., New Orleans School of Medicine, 1869 Confederate veteran, aged 88, died, January 3, of hypertension and nephritis

London O. Rodes, Sikeston, Mo., Missouri Medical College, St. Louis, 1890, aged 70, died Dec. 24, 1935, of arteriosclerosis and coronary thrombosis

Joseph Cannon Ellis, Philadelphia Jefferson Medical College of Philadelphia, 1888, also a minister, aged 74, died, January 4, of bronchopneumonia

James Jackson Stewart, Mount Holly N. C. North Carolina Medical College, Davidson, 1904, aged 59, died, January 1, of a self-inflicted bullet wound

William Kent Ruble, Seattle Tulane University of Louisiana Medical Department, New Orleans, 1924, aged 39, died, January 1, of pneumonia

Joseph Bostock McHenry, Minerva, Ohio Medical College of Ohio, Cincinnati, 1907, served during the World War, aged 58, died, Dec. 24, 1935

William Gabriel Lewis, Eufaula Ala. Atlanta Medical College, 1884, aged 75, died, Dec. 26, 1935, as the result of an injury received in a fall

Ernest Leslie Ward, Eikland Pa. Medico-Chirurgical College of Philadelphia, 1902, aged 59, died suddenly January 1, of coronary thrombosis

George Baxter Poole, Nashville, Tenn., University of Nashville Medical Department, 1910, aged 50, died, January 3, of cardiac thrombosis

Frank Temple Lamb, Berkeley Calif., California Medical College, San Francisco, 1896, aged 77, died Dec. 26, 1935, of bronchopneumonia

Daniel Robert Hughes, Lewistown, Pa., Temple University School of Medicine, Philadelphia, 1927, aged 35, died, January 5, of heart disease

Carlton A. Bates, Hillsdale, Mich. (licensed in Michigan in 1900), aged 63, died, January 5, of chronic endocarditis and cerebral embolism

Alonzo A. Kester, Fort Wayne Ind. (licensed in Indiana in 1897), Civil War Veteran, aged 93, died January 1, of chronic nephritis

Charles Sturgill, Garrett, Ky. University of Louisville Medical Department, 1908, aged 49, died Dec. 26, 1935 of heart disease

Charles Felix Dale, Louisville Ky. University of Louisville Medical Department, 1906, aged 53, died January 2, of pneumonia

Edmund Shields, Cincinnati Medical College of Ohio, Cincinnati, 1889, aged 71, died, Dec. 30, 1935, of coronary sclerosis

Corlin Heath Snyder, Montebello Calif. Michigan College of Medicine and Surgery, Detroit, 1893, aged 80, died Dec. 16, 1935

Christina Scott Clegg, Los Angeles, College of Physicians and Surgeons Keokuk Iowa 1897, aged 75, died Dec. 11, 1935

Robert Young Fisher, Parsons Tenn. (licensed in Tennessee in 1889), aged 67, died, Dec. 30, 1935, of heart disease

Joseph Hubert, Fox Lake Wis., Rush Medical College Chicago 1888, aged 78, died Dec. 27, 1935 of myocarditis

Correspondence

IONIZATION TREATMENT FOR HAY FEVER

To the Editor —I have read with interest the article "Disappointing Results from the Ionization Treatment for Hay Fever," by Dr. Maximilian A. Ramirez (THE JOURNAL, January 25, p. 281). I am at a loss to understand why Dr. Ramirez secured such poor results from a method that has been satisfactory not only to me but to many leading rhinologists of this country. I know there is no way of "guaranteeing" to cure anything about the human body, but the results that I have secured from my own method as compared with results obtained by the use of pollen antigen, have been superior as far as it is possible to estimate from the statistics available. Also, it is interesting to note that a large percentage of the patients treated by ionization had previously received treatment, by injection of pollen extracts, at the hands of some of our most prominent allergists. Figures compiled early in 1935 from the records of the users of ionization treatment showed an average of 80 per cent cures.

H. L. WARWICK, M.D., Fort Worth, Texas

REVERSE COLLES FRACTURE RATIONAL TREATMENT

To the Editor —During the past year there have been several articles in THE JOURNAL regarding the reverse Colles, or Smith, fracture. Webb and Sheinfeld (June 29, 1935, p. 2324) reviewed the literature and presented a case of their own in which open reduction was required. They stated that they had been unable to find a report of a successful closed reduction and thus concluded that all fractures of this type should be regarded as cases for primary operation. Raymer (Dec. 28, 1935, p. 2150) presented a case of Smith fracture which was treated successfully by closed reduction. His conclusion was that this method should be tried in all reverse Colles fractures and that operation should not be resorted to until several attempts at manipulation have proved unsuccessful. In the same issue Bettman and Tannenbaum (p. 2151) presented a reverse Colles fracture treated by closed manipulation and stated that they had had several other similar cases. Their conclusion, like that of Raymer, was that manipulation should be attempted in all cases prior to operative intervention.

I cannot fully agree with either side of the controversy as it has been stated, for neither side has taken into consideration the point which I consider of greatest importance in determining the method of choice for handling these fractures. There are reverse Colles fractures in which closed reduction is quite likely to prove successful. There are others—and they are in the majority—in which one can safely predict that it will fail. The vital factor is the direction of the fracture line. If it is wholly or partly transverse, as it was in the case reported by Raymer and in that reported by Bettman and Tannenbaum, closed reduction is quite likely to prove successful. If it is oblique, as it was in the case reported by Webb and Sheinfeld, operation is the only hope of obtaining adequate reduction.

Colles and Smith fractures are both fractures of the lower end of the radius, the distinction being that in the Colles fracture the lower fragment is displaced posteriorly while in the Smith fracture it is displaced anteriorly. The Colles fracture is produced usually by a blow on the palm of the hand, forcing the wrist into hyperextension and breaking the radius by indirect violence just above the widened lower end of the bone. It is almost always transverse, and when properly and completely reduced by manipulation it tends to remain in position.

The Smith fracture is produced usually by a blow on the back of the hand, forcing the wrist into hyperflexion and breaking the radius also by indirect violence. The anterior surface of the bone usually gives way just above its widened lower end but the posterior cortex often breaks much closer to the joint, causing a fracture line which runs diagonally downward from the anterior to the posterior surface of the bone. Such a fracture may be reduced by traction, but it will not stay in position unless the traction is maintained. Attempts to hold it in place by ulnar deviation and dorsal flexion of the wrist usually result in tilting the short lower fragment without accomplishing their purpose.

On analyzing the mechanics of the breaking force in relation to the size and shape of the lower end of the radius, one can understand why the Colles fracture is nearly always transverse while the reverse Colles is often oblique. When the wrist is forced into hyperextension the strain comes on the anterior surface of the bone, which gives way at its weakest point. This is just above the widened lower end of the bone. As the force continues to act, the strain continues on the still unbroken bone until it is fractured completely. The natural tendency is for the break to continue at the same level at which it started, causing a transverse line of fracture. When the wrist is forced into hyperflexion the strain comes first on the posterior surface of the bone, which gives way at its weakest point. The posterior surface of the lower end of the radius is not reinforced close to the joint as is the anterior surface. Thus the break in the cortex may occur at a point very near the joint. As the force continues to act the strain continues on the still unbroken bone until it is fractured completely. The natural tendency is for the break to continue at the same level at which it started, but this tendency is offset by the fact that it encounters thicker and stronger bone as it progresses toward the anterior surface. Before sufficient strain has been placed on this stronger area to break it, the weaker bone proximal to it gives way, and the break thus progresses proximally as it progresses dorsally. This causes a fracture line which is oblique rather than transverse.

It is known from experience with fractures elsewhere in the body that the difficulty of reduction and retention depends largely on the obliquity of the line of fracture and to a much lesser extent on the direction of displacement of the fragments. In this respect fractures of the lower end of the radius are no exception. A reverse Colles fracture is difficult to reduce not because the lower fragment is displaced anteriorly but because the fracture line is usually more or less oblique. When the patient has the good fortune to break his radius transversely no matter what direction the lower fragment is displaced he can be treated by closed manipulation. When the fracture line is sufficiently diagonal he will require open reduction whether the lower fragment lies anterior or posterior. In short it is not the name of the fracture that makes it irreducible by closed methods nor the direction in which displacement occurs but the obliquity of the fracture line.

In order to obtain a good functional result in fractures close to a joint it is necessary that good anatomic reposition of the fragments be secured with as little trauma as possible. This fundamental precept is particularly applicable to fractures close to the wrist joint. Bearing this point in mind one must choose the method of reduction that will be most likely to succeed. I do not believe it is any better surgery to make several attempts to achieve a closed reduction in a case that is obviously operative than to rush the patient into an operation in a case in which closed reduction is quite likely to be successful. I do believe that one can judge fairly accurately which cases are undoubtedly operative and which are nonoperative by studying the roentgenogram paying particular attention to the obliquity

of the line of fracture. Naturally there will be borderline cases, in which it is not possible to decide whether or not closed reduction will succeed. These cases should have the benefit of one conscientious effort at closed reduction under fluoroscopic control. It can then be decided whether or not open reduction will be required.

I would suggest, therefore, that in all cases of fracture about the wrist, whether Colles or the reverse, the physician should study carefully the line of fracture as shown in lateral x-ray films and base his judgment of the correct method of reduction on the degree of obliquity of the line of fracture, reserving for primary open operation without preliminary manipulation those which show a totally oblique fracture line and attempting a closed reduction in those in which the line of fracture is wholly or partially transverse.

W. STUART WOOD, M.D., Decatur, Ill.

BURNING TONGUE

To the Editor—May I take the liberty of remarking that the answer to our colleague's query (*Queries and Minor Notes*, THE JOURNAL, February 1, p. 403) on burning of the tongue is somewhat incomplete.

If reduction in the volume of the tongue is really indicated, the use of the multiple cautery or the removal of a wedge-shaped piece of tongue tissue will probably help accomplish this. It is evident, however, that it will not favorably affect either the burning question in the mind of the attending physician or the burning in the tongue of the patient. Burning tongue, in the absence of acquired gross pathologic changes in the mucous membrane, is observed in such varied states as simple glossodynia, glossodynia exfoliativa, the avitaminoses, the anemias, the irritated and inflamed grooves of a scrotal tongue, and Lain's disease (burning due to the presence of dissimilar metallic dentures).

It appears to me that the patient concerning whom the Ken tuckian writes has in all probability a congenital macroglossia (of acromegalic lymphangiomatous or unknown nature) with, and this is not unusual, an associated grooved tongue. The lingual imprints of the dental arch are commonly observed in the flabby tongue of the grosser manifestations of this disorder and under these conditions is sometimes termed lobulated tongue. It is stated that the patient has deep "fissures"—probably meaning deep furrows, since fissures usually connote a break in the epidermis—also usual with this complaint. Given a grooved tongue in which the furrows are very deep, the irritation and burning which occasionally develop are usually due to the fact that food collects deep in such sulci and undergoes decomposition, and the products of this decomposition, perhaps with superadded infection, produce the irritation and the burning. If the lips of such affected grooves are separated and their bases thoroughly cleansed at regular intervals with warm sodium perborate solution, rapid improvement generally follows, as the late Dr. Walter Highman of New York pointed out several years ago. Aside from those already noted, there are of course other causes for burning sensations in the tongue such as those connected with Sluder's lingual tonsillitis, Costen's temporomandibular joint derangement, cancerophobia and lingual papillitis. The doctor speaks of "white blebs" forming on the borders and tip of the tongue. Is it possible that he has designated as "white blebs" the whitish areas (leukoplakia of mechanical origin) that one often sees on the borders of such tongues? One other point in connection with the case is that the examination for the cause of any existing macroglossia is incomplete without serologic studies for syphilis.

SIGMUND S. GREENBAUM, M.D., Philadelphia

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

OSTEO ARTHRITIS OF SPINE

To the Editor—My mother aged 68 until a year and a half ago had unusually good health. Her present illness began at that time when she began complaining of vague symptoms characteristic of chronic cholecystitis. I advised her to go to a hospital where a series of roentgenograms revealed a low grade chronic cholecystitis and osteoarthritis of the spine. Her blood pressure at that time was 100 systolic 60 diastolic. She had no jaundice at any time in her life. She was markedly emaciated but had considerable subcutaneous fat. Her blood picture was characteristic of a secondary anemia. The predominant symptoms that caused her most discomfort were intermittent dull aching pains in the region of the navel and lumbosacral region of her back varying from an hour to five hours at a time associated with distention following meals. On the advice of the hospital doctor she was sent home. Another doctor performed a cholecystectomy. She got along quite well but the abdominal and back pain symptom recurred. This pain has been unbearable. June 29 she fractured her left femur at the intertrochanteric point and has gotten along quite well. Of course this is incidental but she persists to complain more of this abdominal and back discomfort than all other previous symptoms combined. I should appreciate any reference or information which you might offer that would be helpful to her.

M D Ohio

ANSWER—The osteo-arthritis of the spine may be incidental and may not be causing the symptoms that might be attributed to it. Every effort should be made to eliminate carcinoma of the stomach, pancreas, liver or duodenum. It is possible that the fracture of the femur was pathologic.

Osteoarthritis of the lumbosacral region would not cause pain in the region of the umbilicus. It would be more apt to work the other way, i. e., osteo-arthritis of the twelfth thoracic and first and second lumbar vertebrae would give pain at a lower level in front. In radicular cases the pain is referred to an area lower down, usually following the general direction of the ribs.

The best way to prove whether osteo-arthritis is an important factor in this case is the therapeutic test of treatment in the nature of bed treatment with boards under the mattress, either head and belt traction or a slightly curved Bradford frame, and physical therapy consisting of gentle massage, heat, and diathermy, if the patient responds favorably.

It is being taken for granted that gross foci have been eliminated from the picture, such as the teeth, tonsils and the genito-urinary and gastro-intestinal tracts.

DANGERS IN USE OF ETHYL OR HIGH TEST GASOLINE

To the Editor—A question has arisen as to whether employees of the company with which I am connected using ethyl gasoline or any other high test gasoline in the washing of automobile parts such as gears were subjecting themselves to any extra hazard more than they would by using the ordinary low test gasoline. I am unable to find any literature on this subject.

W G HESS M D Holtwood Pa

ANSWER—All or many of the gasoline station pumps dispensing ethyl gasoline display a sign reading "Contains lead (tetra ethyl) and is to be used as a motor fuel only not for cleaning or any other use. Avoid spilling." This familiar sign apparently is the outgrowth of recognition that this form of lead unlike inorganic forms, may enter the body through the skin and thus cause lead poisoning. However, the quantity of tetra ethyl lead per gallon of gasoline is so low (approximately 16 cc) that poisoning by absorption through the skin is not likely. Of this Kehoe and his associates (*J Indust Hyg* 16 100 [March] 1934) state "It penetrates the unbroken skin. Indeed skin absorption alone may result in the rapid production of acute illness and death in experimental animals. From a physical point of view the volatility of tetra-ethyl lead is low, but in toxicological terms it is dangerously high, since at ordinary temperatures air saturated with its vapor contains approximately 5 mg of lead per liter." At another point they state: "Their [garage mechanics] exposure to lead in exhaust gas of automobiles burning leaded gasoline is greater therefore, than any other group of persons in the community. Further the handling and the spillage of gasoline the adjustment of carburetors and the repair of other parts of the car often involve skin contact with gasoline and with lubricating oil which may contain minute amounts of tetra-ethyl lead." However these investigators maintain that no evidence is at hand showing lead absorption following skin contact in the ordinary

course of the distribution and use of tetra-ethyl lead. Notwithstanding, it is pointed out that the use of ethyl gasoline for metal washing serves no known useful purpose not obtained through the use of ordinary gasoline. Any such practice as a routine procedure may not be condoned. With respect to "other high test gasolines" it is pointed out that added toxicologic significance is to be attached to them when used for metal cleaning purposes if these gasolines are more readily volatile than "ordinary low test gasoline." Particularly is this true if the fuel is or contains coal tar benzene (benzol). The vapors of all gasolines, naphthas and benzines are toxic and similarly so except that the reader the volatilization the greater the prospect of damage, other things being equal. From the point of view of the physician, preference is extended to the high boiling petroleum derivatives for cleaning purposes.

MUSCULAR ATROPHY

To the Editor—I have a case of muscular atrophy that seems to defy classification. A housewife aged 21 married three years offers as her chief complaint weakness and general wasting of her muscles. The condition started one year ago. At that time she was six months pregnant and gave birth to a dead fetus. Together with this she developed what she called a severe cold sinus trouble and painful discharging ears. This condition lasted about a week and was followed by numbness in the feet and hands which in turn was followed by a stiffness in the legs. She was unable to walk and has been in bed since. Then began a gradual wasting of the small muscles of the hands and feet and a progressive involvement of both upper and lower extremities. Throughout the whole year she has been having pain in the legs. Her only previous illness was that of measles during early childhood. She always enjoyed good health and never noted any weakness in her limbs. There is no history of muscular atrophy in any of the members of the family. Her mother and father brothers and sisters are all living and well. Her only pregnancy was the one mentioned. From her family physician it was learned that at the onset of this condition she was emotionally unstable. She cried easily worried considerably and her tendon reflexes at that time were generally exaggerated. The patient is quite happy and answers questions intelligently. There is a general atrophy of the muscles with the exception of the face and neck. The head does not fall forward. The muscles of the thorax and abdomen show considerable atrophy but not so marked as that of the extremities. The thyroid is visibly and palpably enlarged. The upper extremities show the simian type of hands. The feet show a similar type of wasting with the toes flexed. There is a glossy appearance of the skin over the hands and feet showing trophic disturbance. There are some decubital sores over the sacrum. The tendon reflexes in both upper and lower extremities are absent. The Babinski reflex is normal. The patient is able to move both hands and feet but the toes and fingers are contracted and almost entirely flexed. There is no fibrillary twitching. A definite lateral nystagmus is noted. The pupils are equal and regular and react to light and in accommodation. With the exception of a hypersensitivity about the feet there is no sensory disturbance. There is no loss of sphincter control. The laboratory report shows 3 380 000 red blood cells 95 per cent hemoglobin 3 850 white blood cells 57 per cent polymorphonuclears 32 per cent small lymphocytes 2 per cent large lymphocytes 3 per cent eosinophils and 4 per cent myelocytes. The blood Wassermann reaction is negative. The spinal fluid Wassermann test shows 2 cells per cubic millimeter. There is a very faint trace of globulin. The colloidal gold curve is normal. The Wassermann reaction is negative in all concentrations. Spinal fluid examination was done on three different occasions during the past year. The basal metabolic rate is —12. Roentgen examination shows no evidence of articular changes. The small bones of both extremities show osteoporosis. I will appreciate your opinion on this case.

M D Pennsylvania

ANSWER—The record of the patient in this case is seemingly clear. The onset of the illness during pregnancy especially as this coincided with a period of a severe cold, sinus trouble and discharging ears suggests the definite possibility of a toxic infectious process. Conditions of this type have been described under several headings such as neurontitis, infectious polyneuritis and neurontitis of pregnancy and seem to fit the case satisfactorily. The absence of fibrillary twitchings in the muscles probably rules out chronic polymyositis. The pain in the legs, the glossy skin, the loss of reflexes and the hypersensitivity about the feet are quite in keeping with a polyneuritic disturbance. It is true that, as a rule, there are more sensory disturbances than were noted in this patient but the degree of sensory loss is exceedingly variable in these cases.

It would have been interesting to know the exact amount of total protein in the spinal fluid, as in cases of so-called neurontitis the total protein is markedly increased. Occasionally in cases of this type there may also exist a retrobulbar neuritis.

If the diagnosis of a neurontitis is correct, the patient should slowly improve. It is advisable to eradicate all possible foci of infection. The patient should be placed on a high vitamin diet as occasionally a vitamin deficiency is an element in the production of the symptoms. Baths, massage and supportive measures to the affected parts should be employed over a protracted period of time.

MILK FEVER

To the Editor—Dr De Lee in his textbook of obstetrics emphatically states that there is no such thing as milk fever. Recently I had a patient under my care whose temperature rose to 102 F on her third postpartum day. There was no sign of infection in the genitalia or in any other part of the body. The breasts were large, hard, congested and painful. The breast pump was used once and an ice bag applied continuously. About three hours later the temperature dropped to normal, remaining so the rest of her stay in the hospital. On what grounds could you explain this rise and drop of temperature?

M D Ponce Puerto Rico

ANSWER—In olden times infection was so common after delivery that midwives and doctors had to present an alibi. "Milk fever" was such an alibi and was said to be due to a turning in of the milk. Indeed, the postmortem examination of women who died of this disease often showed coagulated milk and cream in the peritoneal cavity and in the joints, which is now recognized as pus. With the generalization of antiseptic and aseptic measures, this form of "milk fever" has disappeared. Thousands of women have immensely engorged breasts so bad sometimes that they cannot bring their arms to their sides and yet they have no fever.

Theoretically, one might imagine that resorption of milk from engorged breasts, especially if injured, might cause fever, but there is very little milk in engorged breasts. Milk is formed as it is drawn and then the lymphatic and vascular engorgement subsides.

Injection of milk has been used to produce a foreign protein reaction. Mild cases of infection that can cause a temperature of 102 or 103 often occur without a single local symptom or finding on examination such as a mild parametritis or endometritis, and such an explanation, in all probability, applies to the case in question.

USE OF BENEDICT'S SOLUTION FOR DETERMINATION OF SUGAR IN URINE

To the Editor—In our laboratory we have been using Benedict's qualitative solution for the routine testing of urines for sugar purchased in 500 cc quantities from the LaMotte Chemical Company. In view of the fact that with approximately 0.5 cc—from 8 to 10 drops—of the urine I obtained what one might call false positives in almost every urine tested I sent to the Arthur H. Thomas Company and purchased volumetric pipets calibrated to expel exactly 0.5 cc when emptied by blowing. Thereafter I had my technician measure exactly 5 cc of Benedict's solution into a prex test tube following which exactly 0.5 cc of the urine to be tested was blown from the volumetric pipet into this tube containing the LaMotte Company's Benedict's qualitative solution. Even though we have just recently purchased another batch of 500 cc 95 per cent of the urines tested will turn faintly grass green and there will settle at the bottom after cooling spontaneously at room temperature a grayish flocculent precipitate seemingly enmeshing a small amount of a yellowish powdery precipitate causing the tip or the bottom of the test tube when looked at from the bottom after the sediment has settled to give somewhat the appearance of a small quantity of reduced copper. When shaken again the precipitate disseminates itself throughout the rather bluish, non-reduced copper solution and loses the reduced copper precipitate look and assumes more the appearance of a flocculent heavy grayish precipitate. The remainder of the solution then assumes once more somewhat of a grass green hue. It is needless for me to enter a long rehash as to the various constituents in the urine that give precipitates of various types that are not truly due to the presence of dextrose. There is a desirable aspect to having a solution that is sufficiently delicate for clinical purposes which gives a sharp clear cut end point in negative specimens. I mean by this urines that are negative having the solution remain clear and brilliantly blue as it should be after the test has been properly carried out. I wrote asking why I should obtain such an overwhelming number of specimens difficult to interpret—in fact 95 per cent I am wondering what your chemists think of such substances and from whom it might be possible to obtain a Benedict's solution more prone to give a sharp clear cut end point reaction rather than such an overwhelming number of questionable tests. This has become such a source of exasperation that I am looking for a means of escape.

M D Indiana

ANSWER—The qualitative test of the urine for sugar is best performed with Benedict's solution by means of the following technic:

1 Add 0.25 cc (five drops not more) of urine to 5 cc of Benedict's solution in a test tube (about 1 inch in a test tube three-fourths inch in diameter). Shake the test tube to mix the solutions.

2 Heat for one or two minutes over a Bunsen burner or place in boiling water for five minutes.

3 Allow to stand before examining.

No reduction leaves the solution the usual transparent blue and indicates that sugar is not present in pathologic quantities. A translucent greenish blue flocculation settling as a grayish precipitate will appear when the urine is very concentrated with a high specific gravity. This gray precipitate is due to urates and not to sugar. It may also occur when an excess

of urine is added, which is a frequent technical error. If albumin is present in large amounts it may interfere with the precipitation of copper and should be removed by acidifying with acetic acid, boiling and filtering.

Reduction shows opacity with a yellow or red precipitate. The amount of sediment depends on the percentage of sugar present. A green turbidity with slight yellow precipitate at the bottom indicates from 0.1 to 2 per cent sugar. A yellow or red precipitate that settles, leaving a clear fluid, indicates over 3 per cent of sugar. A flocculent precipitate that does not settle rapidly is due to other substances than sugar.

Any laboratory can prepare its own Benedict's solution according to the following formula:

Benedict's Copper Sulfate Solution

Copper sulfate (pure crystallized)	17.3 Gm
Sodium citrate	173.0 Gm
Sodium carbonate (crystallized)	200.0 Gm
(or 100 Gm of anhydrous sodium carbonate)	
Distilled water	to make 1000.0 cc

Dissolve the copper sulfate in 100 cc of distilled water with the aid of heat. Dissolve the sodium citrate and carbonate in 700 cc of distilled water, heating if necessary. Then pour in the copper sulfate solution rinsing the container twice with about 25 cc of distilled water. When cool, dilute to 1,000 cc with distilled water.

CONGENITAL PULMONARY STENOSIS

To the Editor—A boy aged 7½ years weighing 61 pounds (27 Kg) and standing 51¼ inches (130 cm) tall has been affected with cyanosis, shortness of breath, weakness and a constant tired feeling on exertion since birth. The cyanosis is most pronounced in the lips, fingers and toes. Physical examination is essentially negative without abnormalities except for an enlarged heart downward and to the left. The point of maximum intensity is located in the seventh interspace one-half inch to the left of the anterior axillary line. The transverse diameter of the heart at the apex is 6½ inches; the transverse diameter of the heart at the base 4 inches. There is a systolic murmur heard over the entire heart but more pronounced at the pulmonary area. Functionally the heart shows good compensation; the only impairment being marked cyanosis and weakness on exertion. There is no pain over the heart, discomfort occurring only on exertion. There is no edema of the extremities. The second pulmonary sound is weakened and there is a slight systolic thrill present. The right side of the heart is enlarged. A diagnosis of congenital stenosis of the pulmonary valves of the heart has been made. Kindly state method of treatment and prognosis. Can anything be done to remedy this condition? The tonsils and adenoids were removed at 1 year of age. No childhood diseases have occurred except measles. The health is good. He is a very active child.

M D New Jersey

ANSWER—The boy is undoubtedly suffering with congenital heart disease, and the signs and symptoms as given all point to a diagnosis of congenital pulmonary stenosis. In general the clinical diagnosis of the exact lesion in any given case of congenital heart disease may be extremely difficult, and many astute clinicians will commit themselves only to a presumptive diagnosis of the exact nature of the lesion. Experience at the necropsy table corroborates the fact that the signs and symptoms of congenital heart disease may often prove misleading. Nevertheless, the prognosis in any given case will naturally depend on the nature and extent of the organic lesion. Granted that in this case the condition is a pulmonary stenosis, it would be extremely helpful to know whether the stenosis is uncomplicated or is combined with a patent foramen ovale or with an intraventricular septum defect, or whether the stenosis is accompanied by a patent ductus arteriosus. It has been said that if the pulmonary second sound is feeble, the stenosis is uncomplicated or associated only with a patent foramen ovale. If the second sound is normal or slightly accentuated, the stenosis is said to be associated with a septum defect, and if the second sound is greatly accentuated, the stenosis is said to be associated with a patent ductus arteriosus.

According to Maude Abbott the prognosis, as far as duration of life is concerned, is highest for those patients in whom the pulmonary stenosis is uncomplicated by other lesions. In a number of cases analyzed by this author, twice as many individuals lived over twenty years in whom the pulmonary stenosis was accompanied by a closed ventricular septum as did those in whom the stenosis was accompanied by a patent septum defect. In general it may be said that in patients with congenital heart disease there is a tendency to develop pulmonary complications. These patients are said to be liable to tuberculosis especially in the adolescent years. Pertussis is poorly withstood, although the acute exanthems are generally fairly well borne. A superimposed bacterial endocarditis is said to be of high incidence in these patients. In general it may be said that the prognosis is unfavorable in proportion to the degree of cyanosis, dyspnea and palpitation.

The treatment of congenital heart disease can be only symptomatic and should include attention to the state of nutrition precaution against overexertion and general hygienic management. In advanced cases subject to intense cyanosis and cardiac pain, morphine or glyceryl trinitrate may be needed. Inhalation of oxygen has been used to relieve dyspnea. In attacks of syncope, camphor or caffeine hypodermically may be needed. There is no known remedy for congenital pulmonary stenosis.

HEART SENSITIVITY TO TOBACCO

To the Editor—Until recently I had been smoking for twenty five years. Lately however a few puffs on a cigaret greatly accelerate my pulse rate probably to 140 a minute along with a great deal of bodily uneasiness. I may say terror. I have a chronic mitral stenosis with some enlargement of the heart to the right but the lesion seems to be well compensated. I am 43 years of age. Several weeks ago after my usual day and night of smoking my heart action became extremely rapid and irregular. There was some doubt whether there was auricular fibrillation. After I discontinued tobacco for a few days my usual pulse rate dropped from 90 or more to normal or less. Today I tried to smoke a demicotinized (Sano) cigaret manufactured by Health Cigars Co. Inc. New York. When the usual tachycardia began I desisted. Skips and extrasystoles are my usual fare. Is it possible that the 1 per cent or less of nicotine in the aforementioned demicotinized cigarettes is sufficient to irritate my already nervous or irritable or tobacco heart? The thought is suggested that tobacco may contain some noxious principle or property besides nicotine. Surely my imagination would not speed up my heart after smoking the demicotinized cigars. Is there any way of combating this cardiac sensitivity to tobacco? Are bromides in order three or four times a day? I dislike intensely having to give up tobacco. I may add that the mitral stenosis with cardiac (right hearted) enlargement has been proved by percussion auscultation the fluoroscope and the electric cardiograph. I have had about twenty years of uninterrupted strenuous work with scarcely a day of rest or recreation. But what of tobacco?

M D Alabma

ANSWER—Although considerable research work has been done on the subject, the possible toxic effects of various components of tobacco and tobacco smoke have not been definitely established with the exception of the effects of nicotine. There are considerable data to show that tobacco smoking does have an immediate stimulating effect on the sympathetic nervous system as does nicotine but this varies greatly with different individuals. Also certain sympathetic nerves may give, selectively, a much greater response than others for example the vasomotor nerves, the gastric secretory nerves or the accelerator nerves of the heart. Opinion is divergent regarding any other direct effect on the heart or on the coronary circulation. Analysis has shown that the so called demicotinized Sano cigarettes contain at least a third as much nicotine as ordinary cigarettes, which contain only from 2 to 2.25 per cent so that if an individual's sympathetic nerves are easily affected by nicotine the less than 1 per cent might be sufficient to produce a response.

A reasonable hypothesis in the case in question is that in the presence of mitral stenosis of some years duration, the threshold of irritability of the myocardium has finally become lowered to the point at which stimulation of the accelerator nerves by the regular dose of nicotine finally produces an abnormal response. Digitalis quinidine barbiturates and bromides could be tried one at a time in an effort to reduce both the myocardial and the sympathetic irritability but the simplest and possibly the only effective procedure will be complete abstinence from tobacco.

COLLOIDAL SULFUR IN ARTHRITIS

To the Editor—I am much interested in colloidal sulfur therapy for arthritis and neuritis. What do you think of it? Where can I secure literature on sulfur treatments? What firms make colloidal sulfur? I have been told that the sulfur content of the system can be determined only by the cystine content from the nails. Can you give me the laboratory technique and method of determining the cystine content of the nails? I am a sufferer from neuritis.

M D Ohio

ANSWER—Intravenous or intramuscular injection of colloidal sulfur has been used for some years in the treatment of chronic arthritis. Its employment has some enthusiastic advocates (Woldenberg S C *M Rec* 139 161 [Feb 21] 1934 Wheelodon T F *J Bone & Joint Surg* 15 94 [Jan] 1933). The toxicity of such colloidal sulfur depends largely on its dispersion and the speed of intravenous injection. The greater the dispersion the greater the toxicity and the smaller the dose required. There is a distinct risk of anaphylactoid or colloidal shock (Hanzlik P J and Karsner H T *J Pharmacol & Exper Therap* 23 173 [April] 1924). The pharmacologic action of colloidal sulfur apparently is dependent on the formation of sulfur compounds with hydrogen the halogens and organic matter. Sulfur is also catalytic and tends to accel-

erate oxidation. There is some indirect evidence that sulfur increases the catabolism of proteins in the body. The effectiveness of colloidal sulfur in arthritis is probably more logically attributed to changes in certain ill defined metabolic processes than to any direct local effect on the inflamed tissues. Frequently there is a transient exacerbation of the swelling of the affected joints, which in some cases may be followed by improvement.

The technic for the determination of the cystine content of the nails was reported by M X Sullivan in Public Health Supplement 86 in 1930. The procedure is complex and requires considerable special equipment. Arthritic patients are frequently deficient in sulfur, according to Woldenberg.

HYPERSENSITIVITY TO TRICHOPHYTIN

To the Editor—A man aged 52 with a generalized urticaria of five months duration has been referred to me for sensitization tests. Associated with this condition there is present a fairly marked trichophytosis of both feet. Cutaneous and intracutaneous skin tests to about 200 varied extracts have been essentially negative with the exception of a marked (+ + +) reaction to trichophyton. Is it possible that desensitization to this may relieve his urticaria or is this perhaps incidental? Please advise also as to whether any known cases of urticaria with trichophyton allergy as an etiologic factor have been previously reported.

MAX EHRLICH M D Elizabeth N J

ANSWER—Dermatophytosis of the feet is so common in adults in the United States that it is quite possible that there may be no relationship between the fungous infection and the urticaria. However, cases of asthma, vasomotor rhinitis and urticarial hypersensitivity to trichophyton have been described, and specific reagins (Prausnitz-Kuestner antibodies) to trichophyton have been demonstrated in these patients.

If the patient's positive reaction to trichophyton is of the urticarial type (that is, if it manifests itself in a wheal and flare reaching its maximum at about twenty to thirty minutes after intracutaneous injection) it is likely to be of more significance in this case than if the usual forty-eight hour papular so-called tuberculin type reaction is meant. The latter type of reaction is the usual one to be found in persons who have, or have had, infections with fungi of the trichophyton group.

If the urticaria persists in spite of all classic therapy (Fantus Bernard Therapy of the Cook County Hospital Urticaria and Angioneurotic Edema *THE JOURNAL* Aug 24 1935, p 595) and if the patient presents the urticarial type of reaction to the trichophyton skin test careful desensitization with trichophyton is worthy of trial. The physician must exercise maximum precautions to avoid systemic reactions beginning with very small doses. The injections should be given at intervals of three or four days intracutaneously in ascending doses.

It would seem advisable to test this patient with oidiomycin as well and in case of an urticarial reaction to this fungus group combined desensitization with dermatomycin may be tried.

Additional references

Sulzberger M B and Wise Fred Ringworm and Trichophyton *THE JOURNAL* Nov 19 1932 p 1759
Kerr Phyllis S Pascher Frances and Sulzberger M B Monilia and Trichophyton Extracts *J Allergy* 5 288 (March) 1934

BLOCKAGE OF SALIVARY DUCTS

To the Editor—At present I have under my care two patients suffering from partial blockage—in one case of the duct of the parotid gland and in the other of the duct of the submaxillary gland. As a result of this blockage the glands will increase in size to two or three times their normal size and then the blockage seems to be overcome by the increased pressure and the swelling subsides with the discharge of large quantities of salivary material. Would you kindly outline the treatment for these conditions? I think the blockage is due to salivary concretions in the ducts.

M D Ontario

ANSWER—A good x-ray film of both the parotid gland and its duct and the submaxillary gland and its duct is the most definite and accurate method of determining salivary calculi. In the case of the submaxillary salivary gland a large intra-oral film should be placed over the teeth in the lower jaw, touching the occlusal surfaces on both sides and the tube should be directed from below. This will give a clear view of the gland and its duct without any bony interference. In securing a film of the parotid gland, the film should be placed on the buccal surface of the teeth and placed as far back as possible, and in like manner the field will be roentgenographed without any bony interference. It is sometimes helpful to place a small flexible silver probe in the parotid duct before the film is made. This will indicate the portion of the duct that is free and if there is a stone it should be located at or beyond the end of

the probe. From the description it would seem that there must be some physical interference with the flow of saliva, and this in most cases is a salivary stone. Usually a stone in the submaxillary duct is easily removed from inside the mouth, but, if the stone is located in the gland, the gland will have to be removed.

ALOPECIA DURING PREGNANCY

To the Editor—I have a patient aged 35 who is now two months pregnant. She has had four previous pregnancies three of which terminated in normal deliveries. The children are now 8, 7 and 4 years of age respectively. The third pregnancy resulted in a miscarriage at three months due to overwork. This happened five and one half years ago. During the fourth month of the fourth pregnancy the patient within one week's time lost all the hair from all parts of her body: scalp, eyebrows, eyelashes, axillary and pubic areas. This happened approximately four and one half years ago. About two years ago the hair began to reappear and now is almost normal in its texture, length and distribution. The humiliation of the loss of hair caused the patient to remain almost a recluse in her home for about three years. She is now an extremely nervous type of individual weighing 110 pounds (49.9 kg) with no apparent organic lesions. Financial difficulties have prevented such laboratory procedures as determination of the basal metabolism rate and x-ray therapy of the skull. What would be the possibilities of the etiology of the loss of hair during pregnancy four and one half years ago? This was during the last pregnancy. Is this liable to happen with the present pregnancy? Taking all factors under consideration could one consider this an indication for therapeutic abortion? Please omit name and address. M D Kentucky

ANSWER—The rare occurrence of loss of all the hair during pregnancy is difficult to explain. It has been a general belief that during pregnancy there is an increase in the growth of hair on the body. More recent and better controlled experiments, however, have shown that there is no more rapid growth of hair during pregnancy than in the nonpregnant state. There may be a pituitary factor involved in the present case but this cannot be proved. It is likewise impossible to say whether or not there will be a recurrence in the present pregnancy. In view of the mental upheaval caused by the loss of hair and the length of time it took for the hair to return there is some justification for interrupting pregnancy at the present time. Regardless of whether or not the gestation is terminated, the patient should be instructed in one or more reliable methods of contraception.

APPLICATION OF X-RAYS IN CANCER OF BREAST AND TO OVARIES

To the Editor—Recently I removed a growth or tumor from a woman breast the size of a chicken egg. The pathologist reported a highly malignant scirrhous carcinoma. The woman aged 40 had had the tumor about seven months. The radiologist advised several high voltage treatments following the surgical removal of the tumor. These were given but made the patient quite ill the following day with an upset stomach and pain in the breast. It has been suggested to me to administer high voltage roentgen therapy to the ovaries to bring on the menopause and thus put the affected breast at rest. Do you consider the latter procedure necessary or advisable? The patient dreads further roentgen treatments because of the unpleasant after effects. M D Illinois

ANSWER—Roentgen therapy of the breasts and adjacent tissues is almost imperative if one hopes to obtain a permanent cure of a cancer after simple excision without radical removal of the breast. Nausea and local discomfort incident to such roentgen therapy are sometimes distressing, but these symptoms soon disappear and should be endured.

Roentgen therapy to the ovaries has no place in cases of cancer of the breast. It is true that the artificial menopause just as the natural menopause is followed by atrophy of the breasts but cases in which it is permissible to resort to radiotherapy to produce menopausal atrophy of the ovaries for the purpose of inducing shrinkage of the breasts must be rare indeed.

NAIL BITING IN CHILDREN

To the Editor—I have been asked by several mothers as to the proper treatment for nail biting in children under 4 years of age. Some of these children tolerate and even appear to relish several of the more common bitter preparations that are painted on the skin. Can you advise me of some effective agent? M D Illinois

ANSWER—Nail biting in children should be looked on as a nervous habit due to fatigue caused by excessive physical exercise by increased mental exertion at home or at school by insufficient sleep and rest or not infrequently by a nagging environment. Some children acquire the habit by imitation while others develop it on account of a hereditary neuropathic constitution. In a state of physical or nervous exhaustion a variety of nervous symptoms may occur: one child sucks his thumb, another bites his nail, while still another masturbates.

The treatment by applying bitter substances to the fingers or the use of splints or appliances is of no avail. It is equally useless to scold or shame the child. It is a better plan to attempt to improve the general hygiene of these children, to correct the overstimulating attentions of parents and friends, and to provide for sufficient sleep and rest, as well as to prohibit the reading of exciting bedtime stories. The child should be allowed to indulge only in so much physical and mental exertion as to avoid fatigue. Most of these children will recover from the habit if these general matters are attended to and if the attitude toward them is one of disregard and unconcern.

NERVOUS SENSATIONS IN LEGS IN ANEMIA

To the Editor—Have you any suggestions that might be of value in so called nervous feet? A man suffering from easily controlled pernicious anemia has had nervous sensations in the back of the thighs down the calves for many nights so that he cannot sleep. Heat and cold are apparently of no avail, and frequently he finds it necessary to resort to phenobarbital. M D, California

ANSWER—Besides intensive antianemia therapy (liver, liver extract or desiccated hog stomach) certain physical therapeutic measures, such as active and passive exercise of the legs and back and massage of the legs and back may be tried daily. Mild counterirritants (e.g., alcohol or 1 per cent menthol in alcohol) may be rubbed on the skin of the lumbar region and the legs at bed time. A pad (a folded towel, for instance) placed so as to support the lumbar curve while the patient lies in bed may be used. If the patient is ambulatory, attention should be given to the arches of his feet, efficient supports being used if necessary. Phenobarbital or acetylsalicylic acid is necessary in some patients. The urine should be studied repeatedly for evidence of retention or of cystitis. The group of symptoms may resist treatment and occasionally, although rarely, may be the precursor of progressive spastic contraction of the legs. It should be remembered, however, that this condition may be present in other diseases than true pernicious anemia.

TREATMENT OF SYPHILIS WITH HEART DISEASE

To the Editor—Would it be advisable to treat a patient aged 19 who has secondary syphilis, mitral stenosis with regurgitation and moderate cardiac hypertrophy with nearsphenamine and a bismuth compound or just continuous treatment with the bismuth compound alone? Please omit name. M D Montana

ANSWER—It is improbable that the heart is involved this early. If the correspondent is certain that it is not, there is no reason why he should not go ahead with the routine treatment. Treatment should be continuous until there is a negative Wassermann and Kahn reaction, and the patient should be kept under observation always, with repeated blood examinations. When there is any possibility of cardiac or vascular involvement, it is probably better to use the heavy metals for several months before using the arsenicals. Occasionally, when the heart or the aorta is definitely involved, the patient may be worse even with arsenic or a bismuth compound. This occurs only rarely. If the pulse rate increases under treatment or other cardiac symptoms appear, treatment should be discontinued temporarily. The heart condition must always be kept in mind first and treatment of syphilis is secondary. There is no rule, and it is a matter of judgment in each individual case.

INOCULATION OF DOGS AGAINST DISTEMPER

To the Editor—Will you be willing to give the scientific background of inoculating young dogs against distemper? Are the benefits from inoculation fully accepted? PERCY T. WATSON, M D Northfield Minn

ANSWER—Carre of Alfort (*Etude sur la maladie des jeunes chiens* *Rev. gen. de med. vet.* March 1905, vol. 5, No. 54) and later Lignieres (*Sur la maladie des chiens et le microbe filtrant de Carre*, *Bull. Soc. cent. de med. vet.*, Nov. 30, 1906) demonstrated by limited but convincing experiments that canine distemper was caused by a filtered virus. These were confirmed by Laidlaw and Dunkin, whose extensive researches were conducted under most exactly controlled conditions (the Field Distemper Council Report for June 1925, *Studies in Dog Distemper* *J. Comp. Path. & Therap.* 39, part 3 [Sept.] 1926, *The Prevention of Distemper* *Fields*, Nov. 29, 1928).

Although biologic preparations for canine distemper were available in this country as early as 1913-1914, these early products were prepared from bacteria that are now known to be but secondary invaders following the infection with the primary causative agent, the filtrable virus.

Biologic products prepared from the true causative agent, the filtrable virus, appeared following the investigations of Lock.

hart, Ray and Barbee (*J Am Vet M* 4 77 August 1925)
The high degree of perfection attained in canine distemper biologicals of today, however, resulted from the researches of Laidlaw and Dunkin, which extended over a number of years. Canine distemper vaccine and anticanine distemper serum prepared according to the principles laid down by Laidlaw and Dunkin are approved by the Bureau of Animal Husbandry for preparation under U S veterinary licenses

REMEDY FOR SERUM SICKNESS

To the Editor—Please give me the latest recognized treatment for serum sickness. I have tried everything new that comes out in medical literature but I have not yet been able to give these patients the prompt relief they demand. Please omit name
M D Louisiana

ANSWER—Epinephrine solution 1,000 in doses of 0.1 to 0.2 cc injected intramuscularly usually gives prompt but temporary relief. The dose may be repeated as often as required. Magnesium sulfate in full doses several times daily, enough to produce diarrhea, is the remedy of second choice. The systemic treatment may be combined with the local therapy of urticaria. If the eruption is quite generalized, a warm bath prepared by dissolving a cup of sodium bicarbonate in the bath water is likely to be helpful. Following the bath the skin should be dried completely and dusted freely with talcum powder, to which 0.25 per cent of menthol might be added. For an eruption of more limited extent, calamine lotion with 1 per cent of phenol is likely to be satisfactory. As a systemic analgesic acetylsalicylic acid in 0.3 Gm doses taken every two to four hours may be of advantage, if the itching is severe.

DETECTION OF HISTAMINE

To the Editor—Will you tell me whether there is a practical test for histamine in the secretions (chemical)? If so where can I get the technique, or can you send it to me?
M D Chicago

ANSWER—A simple chemical method for the detection or determination of histamine in tissues and secretions has not been described. Histamine can be detected by means of various modifications of the Pauly diazo reaction. One of the simplest procedures is that of the late Gebauer-Fuelnegg as described by R G MacGregor and W E Thorpe (*Biochem J* 27 1394 1934). One cc of the solution to be tested is mixed with 1 cc of 0.5 normal sodium carbonate and to this is added 2 cc of a fresh diazo reagent made by mixing equal volumes of 0.125 per cent *p*-nitraniline in 0.1 normal hydrochloric acid and 0.37 per cent sodium nitrite. If histamine is present a reddish yellow color forms reaches maximum intensity in one minute and then fades and becomes cloudy. If a quantitative estimation is desired the color may be compared with permanent standards in a colorimeter and the maximum value recorded. As little as 0.01 mg of histamine may be determined in this way. Unfortunately, the test is given by histidine, tyrosine and other compounds. Proteins and ammonium salts also interfere. The removal of interfering substances is a time consuming procedure, and considerable skill is required to avoid loss of histamine. The isolation and determination of histamine in feces and in cecal contents has been described by M T Hanke and K K Koessler (*J Biol Chem* 59 879 [April] 1924).

Somewhat less complicated methods have been developed particularly by Best and his collaborators at the University of Toronto. Thus, MacGregor and Thorpe describe the isolation of histamine by electroanalysis. With simplified extraction procedures however, the colorimetric determination does not appear to yield accurate results and the histamine is best determined by physiologic assay. This can be done by comparing the fall in blood pressure of an etherized cat with the drop produced by a known amount of histamine. The effect of other depressor substances in the extract is allowed for by testing the material again after treatment to inactivate the histamine.

ACIDITY OF TOBACCO SMOKING

To the Editor—Will you please let me know whether there is any basis for the claim that the actual difference in acidity from various cigarettes is of any significance and whether acidity—or difference in acidity—has any effect on the smokers.

M D New York

ANSWER—There seems to be no evidence that the acidity of tobacco smoke is of the slightest importance in relationship to the health of the smoker or to irritation of his throat by the tobacco.

Moreover, there seems to be no evidence that the difference in acidity between the several leading brands of cigarettes is any greater than the difference in acidity between varying specimens of the same brand.

Medical Examinations and Licensure

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Iowa Reciprocity and Endorsement Report

Mr H W Grefe, director, Division of Licensure and Registration reports 20 physicians licensed by reciprocity and 3 physicians licensed by endorsement from Aug 14 through Dec 14, 1935. The following schools were represented

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Loyola University School of Medicine	(1935)	(2)	Illinois
Rush Medical College	(1932)	(1932)	Illinois
University of Illinois College of Medicine	(1926)	(1934)	Illinois
(1935) Michigan			
University of Kansas School of Medicine	(1933)		Kansas
University of Maryland School of Medicine and College of Physicians and Surgeons	(1929)	(1933)	Carolina
University of Michigan Medical School	(1930)	(1933)	Michigan
University of Minnesota Medical School	(1923)	(1927)	Minnesota
Washington University School of Medicine	(1930)	(1930)	Louisiana
Creighton University School of Medicine	(1925)	(1933)	New Jersey
(1935) Nebraska			
University of Nebraska College of Medicine	(1930)		Nebraska
University of Tennessee College of Medicine	(1934)		Tennessee
University of Wisconsin Medical School	(1933)		Wisconsin

School	LICENSED BY ENDORSEMENT	Year Endorsement of
Stanford University School of Medicine	(1935)	N B M Ex
University of Minnesota Medical School	(1931)	N B M Ex
Creighton University School of Medicine	(1934)	N B M Ex

Illinois October Examinations

Mr Homer J Byrd, superintendent of registration, Illinois Department of Registration and Education, reports the written and practical examination held in Chicago, Oct 22-24, 1935. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Seventy four candidates were examined, 69 of whom passed and 5 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of Colorado School of Medicine		(1933)	86
Chicago Medical School		(1935)	75
78 81 81 81 82 82 82 82 83 * 83 84 84 84 85			
Loyola University School of Medicine		(1935)	78
82 82 83 84 85			
Northwestern University Medical School		(1935)	84
85 * 85 86 87 87 88 89 91			
Rush Medical College		(1935)	84
85 * 85 86 86 86 87 87 87 87 87			
School of Medicine of the Division of the Biological Sciences	(1934) 84 (1935) 85	85 86 87	88
University of Illinois College of Medicine	(1934)		88
(1935) 81 * 81 82 82 84 84 84 84 84 85 87			
87 87 87 89			
Johns Hopkins University School of Medicine	(1932)		85
Creighton University School of Medicine	(1933)		81
Temple University School of Medicine	(1934)		81
University of Pennsylvania Department of Medicine	(1904)		81

School	FAILED	Year Grad
Yale University School of Medicine		(1932)
Chicago Medical School		(1935)
Northwestern University Medical School		(1935)
Rush Medical College		(1935)
University of Toronto Faculty of Medicine		(1934)

Thirty one physicians were successful in the practical examination for reciprocity and endorsement applicants held in Chicago, October 24. The following schools were represented:

School	PASSED	Year Grad	Reciprocity with
University of Arkansas School of Medicine		(1933)*	Arkansas
College of Medical Evangelists		(1934)	Ohio
College of Physicians and Surgeons Chicago		(1912)*	Wyoming
Northwestern University Medical School		(1927)	Indiana
Rush Medical College	(1916)*	(1934)	California
University of Illinois College of Medicine	(1934)	(1935)	California
State University of Iowa College of Medicine	(1931)	(1934)	Iowa
Indiana University School of Medicine		(1934)	Indiana
University of Louisville Medical Department		(1920)*	Kentucky
Johns Hopkins University School of Medicine		(1929)	Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons		(1932)	Maryland
Harvard University Medical School		(1934)	Maine
University of Michigan Medical School		(1929)	Michigan
University of Minnesota Medical School	(1927)	(1929)	Michigan
University of Nebraska College of Medicine		(1931)	Nebraska
Vanderbilt University School of Medicine		(1932)	Tennessee
Queen's University Faculty of Medicine		(1923)	Minnesota
Thüringische Landesuniversität Medizinische Fakultät Jena		(1920)	Wisconsin
Université de Genève Faculté de Médecine		(1933)*	Missouri

School	PASSED	Year Grad	Endorsement of
Loyola University School of Medicine		(1935)*	U S Navy
Northwestern University Medical School		(1934) 2N	B M E
Rush Medical College	(1934)	(1935) N	B M E
Harvard University Medical School		(1931) N	B M E
Fufts College Medical School		(1933) N	B M E
University of Michigan Medical School		(1932) N	B M E

* License has not been issued

New Mexico October Report

Dr Le Grand Ward, secretary, New Mexico Board of Medical Examiners, reports the written examination held in Santa Fe, Oct 14-15, 1935. The examination covered 12 subjects and included 100 questions. An average of 75 per cent was required to pass. One candidate was examined and passed. Seventeen physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
College of Medical Evangelists		(1932)	87.8
School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
University of Arkansas School of Medicine	(1918)	(1920)	Arkansas
University of California Medical School		(1934)	California
Chicago Medical School		(1931)	Illinois
Northwestern University Medical School		(1932)	Texas
University of Illinois College of Medicine	(1918)	(1933) N	B M E
University of Kansas School of Medicine	(1930)	(1934)	Kansas
Tulane University of Louisiana College of Medicine	(1931)	(1934)	Louisiana
Lincoln Medical College Nebraska		(1931)	Nebraska
Ohio State University College of Medicine		(1917)	Ohio
Vanderbilt University School of Medicine		(1907)	Colorado
Baylor University School of Medicine		(1910)	Texas
University of Texas School of Medicine	(1933)	(1934)	Texas

Book Notices

Head Injuries By L. Bathe Rawling M.B. B.Ch. F.R.C.S. Consulting Surgeon to St Bartholomew's Hospital London. Cloth Price \$7.50. 1 p. 86 with 22 illustrations. New York & London: Oxford University Press, 1934.

This little book sets forth the author's impressions and opinions concerning some of the clinical phenomena observed in head trauma and the treatment of such injuries. It was written while the author was on vacation, away from all references, and is therefore "a book of personal experience, based on an interest of a lifetime in head injuries." As a result it is a short practical elucidation of the principles governing the management of the average skull fracture case, with much of the text devoted to the operative treatment of the craniocerebral complications requiring operations. Almost all workers in this field will agree with the author's indications for operating in cases of skull fracture. Many will agree with him that there is the occasional case when an exploratory subtemporal decompression is indicated. It is noteworthy that he does not dwell on or recommend subtemporal decompression per se as a method of treatment. His chapter on subdural hemorrhage and subdural hematoma is especially good. It describes a condition more frequently overlooked, with disastrous consequences, than is usually realized. His description of the middle meningeal hemorrhage is the classic textbook picture, which is less often observed in actual practice than is the atypical middle meningeal hemorrhage. The atypical cases therefore are the ones that really should be stressed if more of these middle meningeal accidents are to be diagnosed and saved. This author advocates the use of morphine in cases of head injury, which differs widely from the views of the majority of the authors on this subject in America. He shows clearly that he does not hesitate to use this drug in cases of brain operations, whereas most of the brain surgeons in the United States are strongly opposed to its use. He mentions the fact that in his experience recovery has occurred in only one case of head injury with Cheyne-Stokes respiration. It is the belief of many that the depressing effect of morphine added to the existing respiratory depression from the brain injury is a common cause of Cheyne-Stokes respiration. Without question, the author's views on the use of morphine will not meet the approval of many of his readers. It is interesting to note that he thoroughly believes in the use of lumbar puncture as a routine procedure for diagnostic purposes in all head injuries and yet condemns it as a therapeutic measure and quotes Dandy as being in agreement with this view. Dandy of course condemns even diagnostic punctures. A survey of the opinions of ten leading neurologic surgeons in this country disclosed that eight used lumbar punctures in treatment and believed, when indicated, that this was a life-saving procedure. Further, only two favored diagnostic punctures and none were in favor of the routine use of lumbar puncture. In spite of a few controversial points, such as this, the reader will find the book an interesting and exceedingly helpful treatise on head injuries. It is not written for the brain specialist but rather for the average physician or surgeon, who is being called on to treat these serious craniocerebral injuries more and more frequently, owing to automobile casualties. To him this book has a practical message.

The Theory of Emulsions and Their Technical Treatment By William Clayton D.Sc. F.I.C. Chief Chemist and Bacteriologist Messrs Cross and Blackwell Ltd. London. Third edition. Cloth Price \$8. 40 p. 40 with 91 illustrations. Philadelphia: P. Blakiston's Son & Co. Inc. 1934.

The definition of an emulsion as a system of two liquid phases, one of which is dispersed as globules in the other, immediately suggests the wide distribution of these systems in all biologic and technologic materials. In this edition of his well known treatise on emulsions, the author has thoroughly revised the text and extended it more than 50 per cent. More than half the volume is devoted to theoretical considerations of emulsions and borderline subjects, while the remainder deals with technical applications. The field covered is so vast that even a transcript of the table of contents fails to indicate the wide range of subjects treated. The book contains thirteen chapters dealing with dilute emulsions as oil hydrosols, the air/liquid interface, adsorption at liquid/liquid interfaces, emulsifying

agents, properties of emulsions, theories of emulsions, dual emulsions and inversion of phases, emulsions in biologic investigations, miscellaneous emulsions, the preparation of emulsions—basic principles, the preparation of emulsions—technical operations, deemulsification, and physical measurements in emulsions. In the chapter on biologic emulsions the author discusses such topics as the chylomicron emulsion, the parenteral administration of emulsions, and milk. This book is recommended to all those who are interested in acquiring a well rounded knowledge of the theory and practice of emulsions. In spite of the fact that the space devoted to discussions of specific biologic investigations is necessarily limited, the volume will be found stimulating by those workers in the biologic sciences who are in a position to apply a thorough understanding of the properties of emulsions to the study of some of the fundamental problems of protoplasmic structure and behavior.

La tuberculose ostéo articulaire. Evolution diagnostique de début et traitement. Par Jacques Calve Avec la collaboration de M Galland et M Mozer. Bibliothèque de phthisiologie sous la direction de Leon Bernard professeur de clinique de la tuberculose à la Faculté de médecine de Paris. Paper. Price 50 francs. Pp 208 with 101 illustrations. Paris: Masson & Cie 1935.

Calve presents a complete description of the evolution of tuberculosis of the bones and joints, as well as the diagnosis and treatment of the disease. He calls attention to the fact that tuberculosis of the bones and joints is practically always preceded by a primary infection elsewhere in the body. On roentgen examination he often finds such foci of disease in the lungs, and on postmortem examination there is often definite evidence of disease in the lymph nodes of the hilum or the mesentery. The fact that the intradermal tuberculin test is nearly always positive is emphasized. After the primary lesion is established a bacillema occurs, at which time tubercle bacilli find lodgment in the bones and joints. After this has occurred there may be either the tendency toward destruction, resulting in ulceration and necrosis, or the tendency toward healing, resulting in a tissue reaction, which controls the disease. Considerable space is devoted to the diagnosis of tuberculosis of the various bones and joints and emphasis is placed on making the diagnosis early. The difficulties of such diagnoses are emphasized. General methods of treatment are considered, such as heliotherapy, medication and tuberculin treatment. The author also gives in considerable detail his methods of treating various lesions surgically. The book is profusely illustrated and will serve as a fine manual not only to those especially interested in orthopedics but also to those interested in tuberculosis in general.

Growing Superior Children. By I Newton Kugelmass M.D. Ph.D. Sc.D. Attending Pediatrician of the Broad Street Hospital, French Hospital and Heckscher Institute, New York. Cloth. Price \$3.50. Pp 568 with illustrations. New York & London: D Appleton Century Company, Inc. 1935.

The purpose of this book is to explain to parents how superior results can be obtained in the rearing of children. The individuality of the child and the necessity for individualization in care are emphasized. For the author the "average" child is nonexistent; the tempo of the child's development can "be modified in the direction of more wholesome development" and by superior care from birth "early developments can be accelerated two or three years." The book is divided into four sections dealing respectively with the new-born, the period of infancy, childhood and adolescence. In each of these sections the physical traits, the course of physical development, the nutritional needs, the prevention of physical and psychologic disturbances and the training in the intellectual, emotional and social spheres are dealt with. The author is quite specific in his discussion of the physical development and growth of the infant and young child and their nutritional needs. Feeding schedules for infants, balanced diets for older children, a special diet for constipation and similar explicit aids to parents are included. Habit training, descriptions of normal course of mental development and the cultivation of emotional stability are given much attention. The problems of the period of adolescence, physical, emotional and social, are given rather full treatment. Many schedules, tables and illustrations enrich the book. The author is to be commended strongly for his effort to present a conception of

the child as a developing organism in an environment that strongly influences the development. He views the child as a totality rather than from the too restricted point of view that characterizes many medical approaches to the child's problems. Physical, intellectual, emotional and social aspects of the child's developmental needs are properly related in this presentation.

Certain shortcomings must be noted. At times, rather dogmatic statements that might not bear the cold scrutiny of the author's own critical regard are made, particularly in sections dealing with the emotional life of the child. Some of these statements must of course be attributed to the author's effort to couch his work in terms understandable to parents, but in this field he is not always accurate and not always understandable. viz "The mental make-up of the child is predestined at conception" (p 404). "Emotion constitutes the child's psychic life" (p 414). "The more the spring of action is transferred from the emotion itself to the condition that produces it, the better adjusted is the individual" (p 414). And if one is to trouble to mention and define the Oedipus complex for parents, the definition should be a correct one. That given on page 542 is incorrect. While the author's whole point of view, in discussion of the mental and emotional life of the child, is an admirable one and his advice sound, this aspect of the book is less authoritatively treated than are the problems of physical growth and development. The division into age groups has resulted in some degree of repetition.

Die Fermente und ihre Wirkungen. Von Prof. Carl Oppenheimer. Dr. phil. et med. Supplement. Lieferung 2 (Bd 1. Spezieller Teil. Hauptteil III). Paper. Price \$6.80. Pp 161-320 with 13 illustrations. The Hague: W. Junk 1935.

The four volumes of the fifth edition of this monumental work were completed in 1929. The new supplement when completed will add two volumes to cover the recent knowledge to the "special part" of the original work, that is, the general field of enzyme research without special reference to methods and technology. The first two issues of the supplement under consideration here cover the esterases and carbohydrases up to heterosides. The same high standards of organization, presentation and completeness are maintained in the new edition that characterized the older editions. In the general discussion on enzyme character are given the views of Willstädter to the effect that the enzyme activity may reside in a unit, the "agon," which may or may not be firmly combined with a colloidal complex, the "pheron." The combinations of "agon" and "pheron," called the "simplex," then represent various enzyme combinations with specific activities and various dissociation constants. The discussion on esterases is unusually complete and especially welcome because the great amount of new work on phosphatases is now put together for the first time in an excellent review. In the discussion on the carbohydrases naturally much emphasis is placed on the quantitative and qualitative actions as related to the structure of the substrate. The work continues to be a master reference work for the specialist as well as for the general biologist.

Diseases of Women. By Harry Sturgeon Crossen M.C. F.A.C.S. Gynecologist to the Barnes Hospital, St. Louis Maternity Hospital and St. Luke's Hospital and Robert James Crossen M.D. Instructor in Clinical Gynecology and Obstetrics, Washington University School of Medicine. Eighth edition. Cloth. Price \$10. Pp 999 with 1058 illustrations. St. Louis: C.V. Mosby Company 1935.

For many years this has been a standard textbook for students because it presents the elements of gynecologic examination and diagnosis in a simple and orderly manner. The present edition, which has been reset as well as revised, has been much improved by the addition of a compact section on gynecologic pathology. This chapter, consisting of 148 pages with 184 illustrations, furnishes the student with an excellent outline of all important infectious and neoplastic diseases of the female genitalia from the pathologist's point of view. The new volume is instructively and profusely illustrated and, in spite of the fact that many of the original photomicrographs have not reproduced well, gives the student an adequate idea of the clinical and histologic appearance of most gynecologic lesions. Newer concepts of the role of hormones in gynecologic physiology, pathology and therapy have been presented with proper conservatism. Since few debatable points have been considered,

the reader may be assured of the soundness and maturity of opinions expressed. The writing is clear and makes fairly smooth reading. There are few repetitions. The publishers as might be expected, have done excellent work. Adverse criticism of a work of such venerable worth is unnecessary. The splendid earlier editions (the first was copyrighted in 1907) have been frequently and faithfully revised. However the plan of the work remains the same. The emphasis is on morphology and pathology rather than on physiology. The style is that of anatomy books, admirable for the beginner but a little tedious for the graduate. There is lack of emphasis on common diseases, and lack of detailed information on uncommon diseases. The general practitioner searching for details of treatment will be disappointed, as will the gynecologist requiring opinions on technical problems such as presacral sympathectomy and radium dosages. Some of the older chapters are verbose, and the newer ones sketchy. Space has been saved by omitting references. Little use is made of the valuable gynecologic statistics that have been accumulated in the last twenty years. One cannot but regret that authors with such experience and knowledge have not produced an entirely new book presenting the same material in a more modern manner. Nevertheless, medical students and those who have used previous editions will find the new volume of great value.

Mikroskopische Methoden in der Mikrochemie. Von Dr. phil. et med. Ludwig Kofler, o. o. Professor und Vorstand des pharmakognostischen Instituts der Universität Innsbruck und Dr. phil. et med. Adelheid Kofler, Unter-Mitarbeiter von Dr. phil. Adolf Mayrhofer, o. o. Professor für Pharmakognosie an der Universität Wien. Monographien aus dem Gesamtgebiete der Mikrochemie. Paper. Price 9 marks. Pp. 134 with 87 illustrations. Vienna & Leipzig: Emil Halm & Co. 1935.

The isolation in recent years, of minute amounts of substances of profound biologic importance has created a need for various types of microchemical methods. The present monograph, one of a series of monographs on microchemical methods describes several such methods performed with the aid of the microscope. The first section, by Dr. Ludwig Kofler describes a reliable method for determining the melting point of less than a millionth of a gram of material. The second section by the same author, deals with microsublimation and describes the preparation of crystals suitable for determinations of melting points and optical properties by subliming minute amounts of material on a microscopic slide. In both sections the author stresses the fact that these microscopic methods yield information which the macro methods are incapable of giving. In a third section Dr. Adelheid Kofler discusses some optical properties of crystals and describes some simple measurements of crystals, using both ordinary and polarized light. These measurements are of great value in the identification of compounds and may be carried out by workers unfamiliar with the highly specialized technique of crystal measurement. There is also an appendix by Dr. Adolf Mayrhofer, on the use of various dispersion mediums in determinations of refractive indexes of crystals. This little monograph will be found interesting and useful not only by those workers who wish to extend their microchemical technique but also by those readers who are seeking a simple discussion of the optical properties of crystals.

Prescription Writing and Formulary. The Art of Prescribing. By Charles Solomon, M.D., Assistant Clinical Professor of Medicine, Long Island College of Medicine. With a foreword by Lewellys F. Barker, M.D. Cloth. Price \$4. Pp. 351 with 32 illustrations. Philadelphia: London: C. Montreuil. J. B. Lippincott Company. 1935.

The knowledge and skill requisite to prescription writing is an important part of any physician's preparation for the practice of medicine. Individualization of treatment can be practiced only by those familiar with it. There will always be a field for books which add to the clarity of this subject. The author of this book has prepared a treatise that should fulfill the needs of many practicing physicians. The book is simple and written in a well organized and lucid manner. The data are in accord with accepted medical practice and therapeutics. The author stresses the most fundamental aspects of both the science and the art of prescribing. The book is unusually complete for its size and bears the mark of careful editing. Much useless material ordinarily found in books of this type has been omitted and only pertinent scientific and practical facts have been included. The formulary is refreshing in its simplicity.

avoidance of polypharmacy, and preference of official (U. S. P. and N. F.) preparations. When, in the few cases, unofficial preparations are cited, only those accepted by the Council on Pharmacy and Chemistry are given. The medical student and young practitioner of medicine will particularly welcome this book, but any one charged with the responsibility of writing an intelligent prescription can glean much from reading it.

Destiny and Disease in Mental Disorders with Special Reference to the Schizophrenic Psychoses. By C. Macfie Campbell, Professor of Psychiatry, Harvard University. Cloth. Price \$2. Pp. 207. New York: W. W. Norton & Company, Inc. 1935.

Professor Campbell has for long been a brilliant figure in American psychiatry. His clinical acumen and sound conservatism have made him a staunch figure in this country in the field of mental disorders. The present volume incorporates the Thomas W. Salmon memorial lectures and they reflect the best modern psychologic approach in the field of psychiatry. The book divides itself into two portions, one in which the theoretical trends are adequately discussed and in the other of which general trends are illustrated by specific case abstracts. Both sections are written in a style that makes them available for reading by the lay person as well as the interested physician. The general trend of the volume can best be demonstrated by quoting the following passage verbatim:

The study of these serious cases is the study of the tragedy called life and each individual case has its own unique character. No general formula can do full justice to the particular circumstances of the individual case. General formulae are dignified and diagnostic terms give comfort but they are verbal symbols which are apt to do violence to the complexity of the facts. Out of respect for the facts we may be shy of certain diagnostic terms even though we thereby deprive ourselves of a pleasing resting place. Whoever fails to use the familiar verbal symbol may be accused of diagnostic nihilism or of lack of pious recognition of the labors of his predecessors who with unremitting toil constructed their orderly schemata. One may seem to be a disturber of the peace if one rejects familiar diagnostic terms and if one insists that more important than the formal diagnosis of the case is its formulation in terms of the familiar forces of human life based on the painstaking dynamic analysis of the patient and his relation to the environment. With such an outlook the neglect of conventional diagnostic terms may lead to some complaint from our professional colleagues but our patients at least will not be able to reproach us with having failed to do our best to understand the travail of their spirit, their needs and their goals and to bring what ever relief is available to strengthen their bodies, reestablish their personal equilibrium, restore them to their place in the social group.

It is this point of view that makes Campbell's work so worthwhile and his relation with younger psychiatrists of such great importance for the future of this very dark field.

The Pathogenic Aerobic Organisms of the Actinomyces Group. By Dagny Erikson. Medical Research Council Special Report Series No. 93. Paper. Price 1s. Pp. 61 with 11 illustrations. London: His Majesty's Stationery Office. 1935.

This little monograph is the result of a study of a collection of micro organisms belonging to the Actinomyces, Streptothrix or Nocardia group obtained from the National Collection of Type Cultures maintained by the Medical Research Council at the Lister Institute. Miss Erikson has made a systematic study of these micro organisms and has attempted to classify them. Twenty-five species, including fifteen that appear to be entirely new, are identified and described. Eleven plates aid in the description of the morphologic features. This work will be of particular interest to bacteriologists and pathologists who are concerned with the relationships of this group of organisms.

Fundamentals of Biochemistry in Relation to Human Physiology. By T. R. Parsons, B.Sc., M.A., Sidney Sussex College, Cambridge. Fifth edition. Cloth. Price \$3. Pp. 453 with 26 illustrations. Baltimore: William Wood & Company. Cambridge: W. Heffer & Sons Ltd. 1935.

The new edition of this excellent and well written elementary textbook is as welcome as were its predecessors. The changes from the last edition are not striking. Most of the nineteen chapters are essentially the same as in the previous edition. The new features are (a) the addition of methionine as one of the amino acids, (b) new factors in the oxidation of fats, (c) more material on the sterols and related substances, (d) a revised discussion of the chemistry of muscle activity and (e) brief references to flavins and to carbaminohemoglobin combinations. As in the previous edition, the author again refers to sodium as the buffer in the red corpuscles. Also no reference is made to the various types of vitamin D known to exist.

Fasciae of the Human Body and Their Relations to the Organs They Envelop By Edward Singer M.D. Department of Anatomy College of Physicians and Surgeons Columbia University Cloth Price \$3 Pp 105 with 24 illustrations by Elizabeth B Cuzzort Baltimore Williams & Wilkins Company 1935

Fifteen of the illustrations show fascial layers as dissected out from parts of cadavers by the author prepared by a special method of his own, the nature of which he does not divulge. These drawings constitute a real contribution to anatomic illustration. In addition, there are two diagrams and seven illustrations of sections through various parts of the body. There is also a brief text covering forty pages of description, which corresponds fairly well with descriptions of fascias in the standard textbooks of anatomy. The nomenclature throughout is in the Latin form. There are a few mistakes in the Latin form, in the English and in the application of anatomic terms, which will doubtless be corrected in later editions. The illustrations are beautifully reproduced and the form of the book is attractive.

Die Seelenstörungen der Blutdruckkranken Beiträge zur psychiatrischen Alterspathologie und zu einer Psychiatrie auf pathophysiologischer Grundlage Von Dr E Krapf Paper Price 6 marks Pp 120 Leipzig and Vienna Franz Deuticke 1936

This booklet comprises a thorough study of mental disturbances found in hypertensive disease. The author working on the large material of the clinic of Munich ably presents his subject in the form of a classification of mental diseases well illustrated by numerous case histories. Almost all forms of psychoses are represented. Although a satisfactory explanation for the outbreak of psychoses in hypertensive disease is missing the author stresses the importance of organic cerebral changes, such as cerebral edema arteriosclerosis and circulatory disturbances. The book may well be recommended to both the psychiatrist and the internist in dealing with this serious complication of hypertensive disease.

What Everyone Should Know About Venereal Diseases By E R Millis M.D. Paper Price 25 cents Pp 24 Kansas City Kansas The Author 1932

This booklet is written by Dr Millis "to give the public the true facts regarding the various venereal diseases and their complications." It does exactly that in a concise, informative way which tends neither to give moral preachment to the reader nor to reduce him to a state of hysteria. The layman who wants the facts about venereal diseases—the variety of symptoms and their treatment—will get it here without wading through a lot of irrelevant material. Of course the importance of such a pamphlet lies not only in the manner of its presentation but in the possibility of getting it circulated. There are many persons who would like to have the information in just this form but they may never hear of Dr Millis's booklet. The medical profession would be doing the public a great service by finding and developing new avenues of distribution for such important facts.

Oxygen and Carbon Dioxide Therapy By Argyll Campbell M.D. D.Sc. Member of Research Staff National Institute for Medical Research and L.P. Poulton M.A. D.M. F.R.C.P. Physician to Guy's Hospital Foreword by Sir Leonard Hill F.R.S. Cloth Price \$4.25 Pp 179 with 49 illustrations New York and London Oxford University Press 1934

This is an excellent presentation of the physiologic and pathologic facts on which oxygen therapy is based together with the clinical indications for its use. The book is particularly valuable, as it presents the experimental evidence of the value of oxygen therapy in considerable detail especially the experiments of Campbell which definitely show, even under normal conditions, an increase in the oxygen tension of the tissues from the inhalation of oxygen. It is a valuable reference book for every one interested in oxygen therapy.

Essentials of Cardiography By H B Russell M.D. M.R.C.P. Medical Officer in Charge of the Cardiographic Departments at St Thomas's and the Royal Marine Hospital London Cloth Pp 62 with 75 illustrations London J C A Churchill Ltd 1936

This is another short compend on the interpretation of electrocardiograms of which there has recently been a plethora. The assumption is fallacious that there is a short cut to learning the interpretation of the electrocardiogram. However a booklet such as this might serve the student as the author points out,

as a guide for further study. The author is perhaps too ambitious in attempting to cover so much material in so short a space. He presents a number of electrocardiograms and reproductions of orthodiagrams, and he points out the significance of each type. Many of the electrocardiograms, unfortunately, are distorted by extracardiac oscillations. The book is undoubtedly valuable as a brief compend for the medical student trying to review for examination purposes the subjects covered.

The Biochemistry of the Lipids By Henry B Bull Assistant Professor of Biochemistry University of Minnesota Minneapolis Fabriloid Price \$3.25 Pp 127 with illustrations Minneapolis Burgess Publishing Company 1935

This monograph contains a mass of factual material presented in a not too readable style, with numerous tables and graphs. Much of the material is valuable but frequently other statements are either entirely too brief or the facts are not sufficiently well established to warrant referring to. It would have been far more satisfactory to restrict the monograph to the descriptive chemistry and the synthesis, digestion, metabolism and functions of the lipids than to include brief and worthless descriptions of analytic methods. The text contains many typographic errors.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice Alleged Negligence in Treatment of Wound—A bottle that the plaintiff was capping broke, June 4 1931, and pieces of glass entered his right hand at or near the base of the thumb. One piece was promptly pulled out, and the plaintiff, while awaiting the arrival of a physician, immersed his hand in water containing "sylvio naphthol." The physician, the defendant in this case, probed the wound but found no foreign substance in it. He examined the thumb and index finger to ascertain whether "tendons or anything" had been cut, and although the plaintiff was not able to move his thumb, the defendant assured him that as long as he could move his index finger there was nothing in the hand and everything was all right. The defendant bandaged the wound temporarily and that night he put in three metal clips and dressed the wound with a salve. He continued in attendance prescribing the application of hot water and of a solution of epsom salt in water and ordering a bottle of liquid for sleeping purposes. He continued to assure the patient and the patient's wife that the wound was "not infectious at all absolutely good" as late as June 10, when the hand had swelled to more than half again its normal size, the swelling extended up the arm to the neck, and the hand was discolored, numb, and stiff.

On June 10 however, another physician was summoned. He found the patient in a septic condition, "muculated him" and ordered applications of steam towels and an electric pad. The discoloration gradually disappeared the swelling diminished the pain decreased and the patient improved generally. About June 22 the second physician procured a roentgenogram of the injured hand. This showed a small piece of glass in the wound and the patient was then referred to a specialist. The specialist found the tendon cut and the nerve badly severed. An operation was performed, the piece of glass was removed and the necessary repairs were made. A second operation was performed later because of the shortening of the tendon. The patient sued the physician who first attended him but apparently he offered no direct medical testimony to show that the defendant did not exercise proper care and skill. The trial court directed a verdict for the defendant and the patient appealed to the Supreme Judicial Court of Massachusetts.

The duty of the physician-defendant to his patient the plaintiff, said the Supreme Judicial Court, was to use the care and skill of the ordinary practitioner in the community in which he practiced. Only in exceptional cases may a jury determine, without the aid of expert medical opinion, whether the conduct of a physician toward his patient violates that duty. Four medical experts agreed that after an injury of the type here

involved, it would be highly probable that the original wound by glass would cause infection. There was no evidence that the probe used by the defendant was not sterile, or, if it was not, that it caused or contributed to the infection. Since there was no medical evidence to show that the infection followed from any cause other than the wound itself, the jury could not infer that it resulted from the use of infected appliances.

The plaintiff insisted, however, that the jury could have found that the defendant knew or should have known of the probability of infection resulting from the wound and that the jury could readily infer that he did not give the plaintiff proper treatment and attention at a time when, from a layman's point of view, the patient was growing worse. But, said the Supreme Judicial Court, the uncontradicted medical testimony was to the effect that the general treatment of the plaintiff by the defendant was in accord with accepted practice. Moreover, the jury could not have determined by the exercise of common knowledge whether it was or was not proper medical practice to go into the wound to mend the severed tendon or nerve during the period of infection, or, more specifically while the physician-defendant was attending the plaintiff and there was medical testimony to the effect that it would have been improper to operate until after the danger of infection had passed.

A consideration of all the testimony, said the court, disclosed no negligent medical treatment by the defendant. The trial court correctly directed a verdict in his favor. The verdict in favor of the physician-defendant was therefore allowed to stand.—*Bouffard v Canby (Mass)*, 198 N E 253

Accident Insurance Septicemia Following Trauma—The plaintiff sued as beneficiary on a policy of insurance that provided for the payment of certain benefits if her husband's death should result from septic infection of and through a visible wound caused directly and independently of all other causes by violent and accidental means. Judgment was given for the plaintiff. The defendant insurance company appealed to the Supreme Court of Vermont.

It was agreed that the insured had died of septic infection. The evidence, construed most favorably for the plaintiff, was as follows. As the insured was chopping kindling wood, a stick flew up, and it "looked as though it hit him in the face." A clean cloth which the insured held over the junction of his lip and nose became spotted with blood. Four days later there was swelling and pain in the area over which the insured had held the cloth, and on the following day a physician found an abrasion at the junction of the mucous membrane of the nose with the lip, containing a drop or two of pus. The entire face of the insured soon became discolored and swollen. He died of septicemia on the twelfth day after the accident.

Expert testimony was introduced to prove that the infection in this case was of the type that is introduced into the body only through a break in the skin and that it was extremely probable that it had been introduced by and through the abrasion at the nose. The insurer, however, introduced evidence to prove that the infection might have been caused by a boil that the insured had had in his nose eight weeks prior to the accident. The jury was justified, the court thought, in finding from the evidence presented that the impact of the stick had caused an abrasion and that the septic infection was of and through a visible wound as required by the policy as a condition precedent to payment. The question presented, however, said the court, is whether the injury was caused by violent and accidental means.

That the injury was caused by violent means was not disputed. The insurer contended, however, that although the injury might be called accidental, yet the means was not accidental, the chopping of the wood was voluntary and intentional, and there was nothing to show that it was not performed exactly as intended, with no slip or mishap. After an elaborate discussion of cited cases the court concluded that the term 'accidental means' should be interpreted according to the usage of the average man. It should be understood as being employed in its common significance of happening unexpectedly, without intention or design. If the insurer intended the terms 'accident' and 'accidental means' to be construed as differing in their meanings, the contract of insurance should give the insured warning of that fact. The meaning of the term "accidental

means," the court recognized, is dependent for its application on the particular facts presented, what might be the unusual unexpected and unforeseen results under some circumstances might not be such under other circumstances. In this case, the flying up of the stick and its impact on the insured's face was plainly unforeseen and unintended and not a probable consequence of his act. It was an accident, and hence the injury was caused by accidental means. Probably, said the court, all accidental happenings can be traced through the sequence of events back to some voluntary act, but that fact does not attach the voluntary quality of the original act to every subsequent occurrence to which it gives rise.

Judgment for the plaintiff was affirmed.—*Griswold v Metro politan Life Ins Co (Vt)*, 180 A 649

Society Proceedings

COMING MEETINGS

- Alabama Medical Association of the State of Montgomery Apr 21 '36
Dr D L Cannon 519 Dexter Avenue Montgomery Secretary
American Association for Thoracic Surgery Rochester Minn May 4 '36
Dr Richard H Meade Jr 2116 Pine St Philadelphia Secretary
American Association of Anatomists Durham N C Apr 9 '36 Dr
George W Corner 260 Crittenden Boulevard Rochester N Y Secretary
American Association of Pathologists and Bacteriologists Boston Apr 9 '36
Dr Howard T Karsner 2085 Adelbert Road Cleveland Secretary
American Association on Mental Deficiency, St Louis May 14 '36 Dr
Groves B Smith Beverly Farms Godfrey Ill Secretary
American Gastro Enterological Association Atlantic City, N J May 4 '36
Dr Russell S Boles 1901 Walnut Street Philadelphia Secretary
American Physiological Society Washington D C Mar 25 '36 Dr A
C Ivy 303 East Chicago Avenue Chicago Secretary
American Psychiatric Association St Louis May 4 '36 Dr William C
Sandy State Education Building Harrisburg Pa Secretary
American Society for Clinical Investigation Atlantic City N J May 4
Dr J M Hayman Jr Lakeside Hospital Cleveland Secretary
American Society for Experimental Pathology Washington D C
Mar 25 '36 Dr Shields Warren 195 Pilgrim Road Boston Secretary
American Society for Pharmacology and Experimental Therapeutics
Washington D C Mar 25 '36 Dr E M K Geiling 710 North
Washington Street Baltimore Secretary
American Society of Biological Chemistry Washington D C Mar 25 '36
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Iowa City Secretary
American Surgical Association Chicago May 7 '36 Dr Vernon C David
59 East Madison Street Chicago Secretary
American Therapeutic Society Kansas City Mo May 8 '36 Dr Oscar B
Hunter 1835 Eye St N W Washington D C Secretary
Arizona State Medical Association Nogales Apr 23 '36 Dr D F
Harbridge 15 East Monroe Street Phoenix Secretary
Arkansas Medical Society Hot Springs National Park Apr 27 '36 Dr
W R Brooksher 602 Garrison Ave Fort Smith Secretary
Association of American Physicians Atlantic City N J May 5 '36
Dr Hugh J Morgan Vanderbilt University Hospital Nashville Tenn Secretary
District of Columbia Medical Society of the Washington D C May 6
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Federation of American Societies for Experimental Biology Washington
D C Mar 25 '36 Dr E M K Geiling 710 North Washington
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Richardson 111 West Adams St Jacksonville Secretary
Georgia Medical Association of Savannah Apr 21 '36 Dr Edgar D
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Iowa State Medical Society Des Moines Apr 29 May 1 '36 Dr Robert L
Parker 3510 Sixth Ave Des Moines Secretary
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Maryland Medical and Chirurgical Faculty of Baltimore Apr 28 '36
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Minnesota State Medical Association Rochester May 3 '36 Dr E A
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Mississippi State Medical Association Greenville May 5 '36 Dr T M
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J Hatfield 7th and Lombard streets Philadelphia Secretary
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Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

11 1128 (Jan.) 1936

- *Cold Pressor Test for Measuring Reactibility of Blood Pressure. Data Concerning Five Hundred and Seventy One Normal and Hypertensive Subjects. E. A. Hines Jr. and G. E. Brown. Rochester, Minn.—p. 1
- Psychoanalytic Observations in Cardiac Disorders. K. A. Menninger and W. C. Menninger. Topeka, Kan.—p. 10
- Incidence of Blood Vessels in Human Heart Valves. J. T. Wearn, A. W. Bromer and Louise J. Zschiesche. Cleveland.—p. 22
- Notes on Cardiac Pain and Coronary Disease. Correlation of Observations Made During Life with Structural Changes Found at Necropsy in Four Hundred and Seventy Six Cases. H. G. Bruenn, K. B. Turner and R. L. Levy, New York.—p. 34
- Electrocardiograms Derived from Eleven Fetuses Through Medium of Direct Leads. J. D. Heard, G. G. Burkley and C. R. Schaefer. Pittsburgh.—p. 41
- Study of Lead IV of Electrocardiogram in Children with Especial Reference to Direction of Excursion of T Wave. H. Rosenblum and J. J. Sampson. San Francisco.—p. 49
- Pharmacologic and Therapeutic Effects of Certain Choline Compounds. Results in Treatment of Hypertension, Arthritis, Organic Occlusive Vascular Disease, Raynaud's Disease, Scleroderma and Varicose Ulcers. J. Kovacs, L. L. Saylor and I. S. Wright. New York.—p. 53
- Arterial Hypertension in the American Negro. V. E. Schulze. San Angelo, Texas, and E. H. Schwab. Galveston, Texas.—p. 66
- Clinical Results from Oral Administration of Thyetin. Cardiac Glucoside. W. S. Middleton. Madison, Wis., and K. K. Chen. Indianapolis.—p. 75
- Functional Bundle Branch Block. C. L. Tung. Peiping, China.—p. 89
- *Heart Failure in Hypertension. S. H. Averbuch. New York.—p. 99

Cold Pressor Test for Measuring Reactibility of Blood Pressure.—Hines and Brown observed that the response in blood pressure to a standard stimulation (ice water at 4 C) is fairly constant for the normal person. The authors submit the conception that essential hypertension affects only subjects who are hyperreactors. A group of healthy subjects in the later decades of life have been found who have hyperreactions and changes in the retinal arterioles which are indicative of essential hypertension but who have normal or subnormal levels of blood pressure. Normal reactions obtain in aged arteriosclerotic persons whose retinal arterioles do not show changes of hypertension. Subjects with hypertension and arteriosclerosis show hyperreactions. The systolic forms of hypertension seen in neurocirculatory asthenia with tachycardia, in glomerular nephritis and in hyperthyroidism give responses definitely less than do the preexistent and existent stages of essential hypertension unless the two conditions coexist. The authors believe that the abnormality of essential hypertension is an excessive response in the blood pressure to intrinsic and extrinsic stimulation. This abnormality is a hereditary one which appears early in life and remains during life. When the level of the blood pressure is elevated and clinical degrees of hypertension exist, the reactions then increase with increasing severity of the hypertension. This hyperreactive vasomotor mechanism may be an important factor in the production of arteriolar hypertrophy and in the subsequent development of the organic stages of the disease.

Heart Failure in Hypertension.—To investigate the cause of heart failure in hypertension, Averbuch studied the hearts of forty hypertensive patients who died with symptoms of myocardial insufficiency. As a control group thirty hearts from patients with hypertension who died of cerebral accidents, renal insufficiency or incidental disease were likewise studied. Thirty-four (85 per cent) of the patients in the cardiac group had significant involvement of the coronary artery (sclerosis or thrombosis) whereas only three (10 per cent) of the subjects in the control group had significant disease of the coronary artery. The myocardial changes in both groups reflected

roughly the extent and degree of involvement of the coronary artery. In six (15 per cent) of the forty cardiac cases there was not sufficient organic change in the coronary arteries or myocardium to account for the heart failure. Three of these six patients had marked pulmonary complications. Theories seeking to explain the cause of the heart failure in the remaining three cases are reviewed.

American Journal of Anatomy, Philadelphia

58 1258 (Jan. 15) 1936

- Effect of Hysterectomy on Duration of Life and Retrogression of Corpora Lutea and on Secondary Sex Organs in Rabbit. L. Loeb and Margaret G. Smith. St. Louis.—p. 1
- Developmental Capacities of Transplanted Hepatic, Pancreatic and Lung Tissues of Rabbit Embryo. A. J. Waterman. Pittsfield, Mass.—p. 27
- Lung of Human Fetus of One Hundred and Seventy Millimeters Crown Rump Length. D. M. Palmer. Columbus, Ohio.—p. 59
- Lips of the New Born Infant with Reference to Labial Zone Termed Pars Villosa. R. C. Wherry and B. J. Anson. Chicago.—p. 71
- Bilateral Symmetry as Seen in Ossification. J. W. Pryor. Louisville, Ky.—p. 87
- Changes with Age in Cardiac and Body Weights of Wire Haired Fox Terriers. A. E. Cohn and J. M. Steele. New York.—p. 103
- Formation and Development of Blood Vessels in Sensitized Cornea. L. A. Juhaneille and G. H. Bishop. St. Louis.—p. 109
- Studies on Articular Cartilage. I. Growth Mechanisms. H. C. Elliott. Toronto.—p. 127
- Histologic Study of Transplanted Sympathetic Ganglions. J. W. Ward. Nashville, Tenn.—p. 147
- Recovery in Rats on Refeeding After Prolonged Suppression of Growth by Dietary Deficiency of Protein. C. M. Jackson. Minneapolis.—p. 179
- Sexual Differences of Hypophyses and Their Determination by Gonads. C. A. Pfeiffer. Iowa City.—p. 195
- Structure and Mode of Innervation of Capillary Blood Vessels. T. Jones. Liverpool, England.—p. 227

American Journal of Cancer, New York

26 1258 (Jan.) 1936

- Idiopathic Multiple Hemorrhagic Sarcoma (Kaposi). G. M. Mackee and A. C. Cipollaro. New York.—p. 1
- Growth of Rous Sarcoma Inoculated into the Brain. E. Vazquez Lopez. Madrid, Spain.—p. 29
- *Relation Between Incidence of Mammary Cancer and Nature of Sexual Cycle in Various Strains of Mice. E. L. Burns, Marian Moskop, V. Suntzeff and L. Loeb. St. Louis.—p. 56
- Experimental Production of Teratoma Testis in the Fowl. H. J. Bigg. New York.—p. 69
- Genetic Aspects of Mouse Leukemia. E. C. MacDowell. Cold Spring Harbor, N. Y.—p. 85
- Effect of Prolan on Transplantable Mouse Sarcoma. R. C. Tanzer, Cooperstown, N. Y.—p. 102
- Effect of Hypophysectomy on Metabolism of Grafted Tumor Tissue. C. C. Franseen and Claire McTiernan. Boston.—p. 106
- Dibenzanthracene Tumors in Controlled Strains of Mice. C. F. Branch. Boston.—p. 110
- Effect of Anemia Producing Diet on Growth of Carcinoma, Sarcoma and Melanoma in Animals. K. Sugiura and S. R. Benedict. New York.—p. 115
- *Clinical Manifestations and Treatment of Leukemia. L. F. Craver. New York.—p. 124
- Primary Carcinoma of Lung Occurring in Apex. Report of One Case. G. E. Marcil and B. I. Crawford. Philadelphia.—p. 137
- Interstitial Cell Tumor of Testis with Hypergonadism in a Child of Five Years. C. A. Stewart, E. T. Bell and A. B. Roehke. Minneapolis.—p. 144
- Liposarcoma of Kidney. J. S. McCartney and H. M. N. Wynne. Minneapolis.—p. 151
- Primary Tumors of Cranial Bones. C. F. Geschickter. Baltimore.—p. 155
- Simple Experimental Cancer Research. M. C. Marsh. Buffalo.—p. 181

Mammary Cancer and Nature of Sexual Cycle in Mice.—Burns and his associates compared the following characteristics of the sexual cycle in female mice of ten inbred strains which differed greatly in their incidence of mammary cancer: (1) the duration of estrus (period of keratinization in vaginal epithelium) in the individual mice, (2) the average duration of estrus in the various strains, (3) the total number of days of keratinization during a given period in individual mice of each strain and the averages for the various strains, (4) the average number of estrous cycles in each strain, and (5) the normality or regularity of the estrous cycles in the strains and in the individual mice comprising them. The characteristics of the sexual cycle of different strains of mice differ greatly. These differences seem to be constant within a certain range, in a given strain, as indicated by the concordant results of two series of experiments carried out at different times, however, this holds good only with the restriction that the same individual mice were tested in the successive experiments. Although in

certain cases considerable variations exist, the characteristics of the sexual cycle of individual mice on the whole tend to remain constant. There is no noticeable parallelism between any of these features of the sexual cycle and the frequency with which cancer appears in these strains. It may be concluded therefore, that the hereditary tendency to acquire cancer which is characteristic of strains of inbred mice, is not due essentially to the nature of the sexual cycle which distinguishes these strains from each other. Diet exerts some influence on the character of the sexual cycle. In general, the estrous periods were more normal in those experiments in which chow alone was fed than when a mixed diet consisting of chow, corn and oats was given.

The Course and Treatment of Leukemia—Craver devotes his discussion to a report of selected cases illustrating different aspects of the course and treatment of leukemia. One remarkable feature of leukemia is the great variation in duration of its course. It may be a fulminating catastrophe or an extremely prolonged, relatively benign affliction. Occasionally myelocytic leukemia will run a course of ten years or longer, but a long course seems somewhat more common in lymphocytic leukemia. Case reports descriptive of inadequacy of early biopsies for the prediction of the clinical course, borderline cases, lymphocytic leukemia in young patients, leukemic tumors in adults, leukosarcoma and erythroleukemia are given, and treatment by generalized irradiation is discussed. The aspects of the subject brought into question by the cases reported are the great variations in duration and severity of symptoms, suggestions of relationships between certain leukemias and other diseases, such as Hodgkin's disease, lymphosarcoma and erythremia, differentiation from leukemoid states.

American Journal of Clinical Pathology, Baltimore

6 198 (Jan.) 1936

- Peripheral Neurogenic Tumor N C Foot New York—p 1
Determination of Blood Cholesterol I Comparison of Standard Colorimetric Methods and Modified Method with Gravimetric Determination of Digitonin Precipitates J G Reinhold with assistance of Ethel M Shiels Philadelphia—p 22
Id II Factors Influencing Accuracy of Various Methods J C Reinhold Philadelphia—p 31
Further Studies in Experimental Granulopenia with Particular Reference to Sulfhydryl (Glutathione) Metabolism in Blood Dyscrasias F P Parker and R R Kracke Atlanta Ga—p 41
Blood Phosphatase Its Clinical Significance A Yaguda with technical assistance of P C Brown Newark N J—p 57
Size Distribution of Lymphocytes in Human Blood Films D Mainland B K Coady and W Horowitz Halifax N S—p 66
*Bilirubin Concentrations in Human Gallbladder N W Elton Reading Pa—p 81

Bilirubin Concentrations in Gallbladder—Elton observed that the bilirubin contents of fifteen selected gallbladders removed surgically and exhibiting minimal pathologic changes (eleven anatomically normal) ranged from 62 to 1,000 mg per hundred cubic centimeters. All concentrations below 50 mg per hundred cubic centimeters were found in the four specimens showing definite chronic inflammatory reactions and are not acceptable as satisfactory minimums because of possible dilution in a pathologic gallbladder. The contents of six apparently normal gallbladders obtained at necropsy exhibited bilirubin levels of from 35 to 1,786 mg per hundred cubic centimeters from which a concentration factor of 510 may be computed. Liver bile obtained by surgical choledochostomy in three patients with complete common duct occlusion ranged from 17 to 714 mg per hundred cubic centimeters in fourteen twenty-four hour specimens. The usual bilirubin content of liver bile obtained by duodenal drainage in individuals with no known gallbladder disease is from 8 to 10 mg per hundred cubic centimeters, with a further possible decrease to 2 mg per hundred cubic centimeters after prolonged cholestasis. The great variability in the bilirubin content of liver bile, ranging from 2 to 714 mg per hundred cubic centimeters and due to the increased water output of the liver after prolonged cholestasis in individuals without gallbladder dysfunction and to the inhibition of cholestasis in cholelithic disease and hepatic injury, makes it difficult to select a satisfactory average minimal level in liver bile for comparison with the bilirubin contents of gallbladders. However a concentration factor of 105 may be computed from the fact that liver bile obtained by surgical drainage

contained 17 mg per hundred cubic centimeters and that a normal gallbladder contained 1,786 mg per hundred cubic centimeters. A factor of 125 to 100 may be computed from the observation that liver bile in the absence of cholelithic disease ranges from 8 to 10 mg per hundred cubic centimeters and that it is not unusual for a gallbladder to contain bile of 1,000 mg per hundred cubic centimeters. Since it is possible for a clear alkaline liver bile to have a bilirubin level as low as 2 mg per hundred cubic centimeters, an extreme combined factor for liver and gallbladder jointly might be computed as 893. A most conservative concentration factor, attained without undue fasting, appears to be from 30 to 50.

American J Digestive Diseases and Nutrition, Chicago

2 651 708 (Jan.) 1936

- Psychogenic Factors in Ulcerative Colitis A J Sullivan New Haven Conn—p 651
Gastroscopy with Flexible Gastroscope R Schindler Chicago—p 656
Bacteriologic Findings in Disease of Biliary Tract Improved Method of Obtaining Cultures of Bile by Duodenal Drainage J R Weiss and Charlotte H Phillips New York—p 663
V Effects of Drugs on Motility of Isolated Segments of the Intestine of Man J A Bergen and J S Guthrie Rochester Minn—p 668
Some Normal Variations in Emptying Time of Human Stomach (Using Carbohydrate Meal) E J Van Liere and C K Sleeth Morgantown W Va—p 671
Experiences with Postoperative Jejunal Ulcer and Gastrojejunocolic Fistula F H Lahey Boston—p 673
Traumas Resulting from Sigmoid Manipulation B B Crohn and B D Rosenak New York—p 678

American Journal of Hygiene, Baltimore

23 1 204 (Jan.) 1936

- Growth Inhibitory Power of Specific Antisera as Influenced by Carbohydrates of Pneumococci and Bacterium Lepisepticum J H Dingle Baltimore—p 1
Study of Curative Action of Arsenophenylglycine in Trypanosoma Lewisii Infections in Rat M L Kuhs C C Pfeiffer and A L Tatum Madison Wis—p 10
Human Infestation with Dwarf Tapeworm (Hymenolepis Nana) in the Southern United States G F Otto Baltimore—p 25
Investigation of Hookworm Infestation in Thirty Six Counties of Kentucky A E Keller W S Leathers Nashville Tenn and M H Jensen Sweetwater Texas—p 33
Studies on Nature of Immunity to Intestinal Helminths III Renewal of Growth and Egg Production in Nippostrongylus After Transfer from Immune to Nonimmune Rats A C Chandler Houston Texas—p 46
Study of Rabbit Virus III in Tissue Culture G Ivanovics and R R Hyde Baltimore—p 55
Further Studies on Relation Between Vitamin A Metabolism and Susceptibility to Bacterial Toxins C C Torrance Albany N Y—p 74
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Active Immunization of Albino Rats with Protein Fractions from Taenia Taeniaeformis and Its Larval Form Cysticercus Fasciolaris D H Campbell St Louis and Chicago—p 104
Relation of Hydrogen Ion Concentration to Growth and Encystment of Endamoeba Histolytica in Cultures Gladys M Craig New York—p 114
Pharmacologic Observations on 4 Carbinaminophenyl Arsonic Acid (Carharson) in Rats A Gabaldon Baltimore—p 122
Studies on Trichomonas Columbica a Flagellate Parasite in Pigeons and Doves G Cauthen Baltimore—p 132
*Influence of Odor on Appetite C E A Winslow and L P Herrington New Haven Conn—p 143
Localized Centers of Hookworm Disease in Kentucky and North Carolina G F Otto Baltimore—p 157
Toxicology of Selenium I Study of Distribution of Selenium in Acute and Chronic Cases of Selenium Poisoning H C Dudley Baltimore—p 169
Id II Urinary Excretion of Selenium H C Dudley Baltimore—p 181
Concentration and Standardization of Type I Antipneumococcus Serum Mary B Kirkbride Jessie L Hendry and P P Murdick Albany N Y—p 187

Influence of Odor on Appetite—Winslow and Herrington used eight young men between 17 and 19 years of age as experimental subjects. They came to the laboratory on four or five mornings each week during the months of February, March and April 1935 and were kept under observation in one of the experimental rooms from 9:30 a m until 12:30 p m. On certain days the subjects were exposed to the odor of heated house dust, while on other days no such odor was present. This odor was selected as an example of one to which exposure is common and which, although the odor is a relatively mild one is often noted as subjectively undesirable.

The investigation shows that the odor given off from heated house dust (even when not consciously perceived) has a clearly demonstrable effect in reducing the appetite for food and hence may be considered as definitely harmful to health. From a general physiologic standpoint the results seem to be of some importance. They furnish the most convincing evidence that has yet been offered (indeed, the only controlled objective evidence that has been offered except for the results of the New York State Commission on Ventilation) of the effect of mild organic odors on human health and comfort.

American Journal of Surgery, New York

31 1 192 (Jan.) 1936

- Surgical Repair of Cleft Palate with Especial Reference to Lengthening Soft Palate. H. S. Vaughan, New York.—p. 5
Recent Fractures of Nose. J. Safian and J. Jamerin, New York.—p. 10
Surgical Prosthetics of Oral and Facial Defects. N. A. Olinger and E. F. Art, New York.—p. 24
Relationship Between the Otolaryngologist and the Plastic Surgeon. H. Hays, New York.—p. 38
Burns. H. H. Ritter, New York.—p. 48
*Contribution to Physiologic Method of Repair of Damaged Finger Tendons. Preliminary Report on Reconstruction of Destroyed Tendon. Sherith L. Mayer and N. S. Ransohoff, New York.—p. 56
*Intradermal Test for Pregnancy. B. Grushkin, Philadelphia.—p. 59
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Craniocle. Report of Two Cases Repaired by Bone Graft. W. E. Adams, Chicago.—p. 68
Calcified Breast Tumors. J. H. Conway, New York.—p. 72
Acute Perforated Peptic Ulcer. Review of Sixty Three Cases. M. Corff, Philadelphia.—p. 77
Clinical Aspects of Gastrojejunal Ulcer. F. M. Jordan, Brooklyn.—p. 83
Lowered Death Rate for Acute Appendicitis. J. E. Loveland, Middletown, Conn.—p. 87
*Low Reserve Kidney. C. H. Peckham and M. L. Stout, Baltimore.—p. 92
Trichomonas Infestation of Prostate Gland. A. C. Drummond, New York.—p. 98
Graphic Illustration of Various Forms of Incontinence. M. Muschat, Philadelphia.—p. 104
Endometrioma on Ligamentum Rotundum Uteri. W. C. Beck, Chicago.—p. 105
Rectal Stricture. Clinical Analysis of Fifty Eight Cases with Observations on One Hundred and Fifty Four Free Positive Cases of Lymphogranuloma Inguinale. L. Iichtenstein, New York.—p. 111
Benign Stricture of Rectum. G. P. Pennoyer, New York.—p. 127
Septic Joint Disease. Report of Four Cases of Hip Joint Involvement. J. R. Regan, Milwaukee.—p. 131
Treatment of Unimpacted Fractures of Surgical Neck of the Humerus. J. A. Caldwell and J. Smith, Cincinnati.—p. 141
New Treatment of Acute Osteomyelitis. R. E. Humphries, East Orange, N. J.—p. 145
Ephedrine Sulfate in Spinal Anesthesia. Administered Prior to Subdural Block. M. Weinstein and A. Barron, Long Island City, N. Y.—p. 154

Repair of Damaged Finger Tendons.—The method of Mayer and Ransohoff for supplying a new sheath in the repair of damaged finger tendons is as follows: Pure celloidin tubes, varying in size and length to correspond with the varying sizes of the digital tendon sheaths, are prepared in advance and sterilized for twenty minutes in a 1:2000 solution of mercuric oxyquinide. They are then placed in sterile solution of sodium chloride until ready for implantation. The operation is done in two stages: the first consists in the complete excision of the scar and the implantation of the celloidin tube; the second performed after a lapse of from four to six weeks in the removal of the tube and the implantation of the new tendon. In all but one of the cases, both in experimental animals and in the authors' patients, the celloidin tube healed in aseptically and at the second operation was found enveloped by a smooth glistening tissue, the surface of which microscopically and macroscopically resembled that of a normal sheath. Through this smooth walled channel the grafted tendon could be seen gliding as the patient contracted his muscle much as the normal tendon glides through the digital theca. The normal relationship between tendon and sheath had been restored. The present technique has enabled the authors to immobilize the operated finger for from ten to fourteen days without creating vicious adhesions between the tendon and the new sheath. During this period the grafted tendon has united to the host with sufficient firmness to permit active exercises and electrical stimulation.

Intradermal Test for Pregnancy.—Grushkin bases his test on previous work concerning the nature of homologous proteins producing an allergic reaction by the formation of pseudopods when injected intradermally in positive cases of malignant manifestations. The same principle has been applied in the determination of pregnancy by the use of placental tissue as an antigen, which, when introduced intradermally, causes pseudopod formation at the site of injection in pregnant women, but no pseudopods appear when pregnancy does not exist. One-tenth cubic centimeter of the antigen is injected intradermally with a 27 gage needle and a 1 cc tuberculin syringe. The injection should not be forced. In positive cases a slight area of inflammation with pseudopod formation appears within ten minutes. In negative cases no such reaction takes place. It is advisable to use a control of physiologic solution of sodium chloride with each test. The control must always be negative, showing no inflammation and no pseudopods. The bleb after the injection must be perfectly round and have the appearance of orange peel due to the hair follicles, in which case one is sure that the test was done intradermally. For the preparation of the antigen, placentas are obtained as soon as possible following delivery. They are washed, cleaned and freed from blood, ground into pulp and placed in acetone three times their volume, for twenty-four hours. The acetone is poured off, the tissue allowed to dry and the acetone evaporated. It is then extracted with a tenth normal sodium hydroxide solution for twenty-four hours and neutralized with a solution of hydrochloric acid and a buffer solution made of 0.05 normal hydrochloric acid and 2.27 Gm. of potassium dihydrogen phosphate per liter. The antigen is brought to a pH of 6.9, and 6 drops (0.4 cc.) of a mixture of two parts of glycerin to one of tricresol for every 10 cc. of the extract is added as a preservative. It is then placed in pyrex containers and is ready for use. This test should not be done during menstruation owing to the decidual involvement of that process which will respond to the homologous protein of the placental extract, giving positive reactions. It should not be performed in endocrine disturbances or on hypersensitive skins, which might respond to anything.

Low Reserve Kidney.—As the result of a five year follow-up study of a series of toxemic patients originally diagnosed as having "low reserve kidney," Peckham and Stout find it necessary to alter the concept of this condition as proposed by Stander and Peckham in 1926. It is their opinion that the condition is limited to primiparas and that it manifests itself, usually not before the last month of gestation, by the presence of a moderate degree of hypertension and a small amount of albumin in the urine. Ordinarily it clears up rapidly in the early puerperium and does not recur with subsequent pregnancies. Clinically the course is mild and does not resemble true preeclampsia.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

20 1 114 (Jan.) 1936

- Recommendations for Venereal Disease Control Program in State and Local Health Departments. Report of an Advisory Committee to the U. S. Public Health Service. R. A. Vonderlehr, Washington, D. C.; H. N. Bundesen, Chicago; J. E. Moore, Baltimore; N. A. Nelson, Boston; P. S. Pelouze, Philadelphia; W. F. Snow, New York; J. H. Stokes, Philadelphia; U. J. Wile, Ann Arbor, Mich.; and I. J. Usilton, Washington, D. C.—p. 1
*Reaction of Connective Tissues to Lipids and Other Foreign Bodies. Edna H. Tompkins, Nashville, Tenn.—p. 22
Gonococcus Infection of Anus and Rectum in Women. Its Importance, Frequency and Treatment. Study of Two Hundred and Fifty Cases. W. M. Brunet and J. B. Salberg, Chicago.—p. 37
Congenital Syphilis in Children. Results of Treatment in Five Hundred and Twenty One Patients. Part II. F. R. Smith, Jr., Baltimore.—p. 45
*Role of Acute Gonorrheal Urethritis in Masking Lesions of Early Syphilis. J. E. Kemp and C. Shaw, Chicago.—p. 56
Syphilis of Spinal Cord. N. W. Winkelman, Philadelphia.—p. 62

20 1 180 (Jan. Supplement) 1936

- Report of the Committee for Survey of Research on Gonococcus and Gonococcal Infections. S. Bayne Jones, New Haven, Conn.; E. L. Keyes, W. Clarke, New York; F. G. Blake, New Haven, Conn.; and Ruth Boring Thomas, Bloomfield, N. J.—p. 9

Reaction of Connective Tissues to Lipids.—Tompkins carried out five groups of experiments on guinea-pigs. 1. The subcutaneous tissues were studied at various intervals of time following single injections of a variety of unrelated foreign bodies (phosphorus in olive oil, olive oil liquid petrolatum,

poppy-seed oil, and the like) 2 Subcutaneous injections of lecithin prepared from egg yolk were given 3 Injections of lecithin and liquid petrolatum were given singly or mixed 4 Also in rabbits, lipids prepared from brains were injected subcutaneously 5 Studies were made of the peritoneal reactions in rabbits and guinea-pigs following repeated injections of some of the substances used in the first three experiments The reaction of the connective tissues to many unrelated foreign bodies including tubercle bacilli, is presented by the following sequence of events 1 An early influx of polymorphonuclear cells, which subsides in a few days 2 Appearance of monocytes about three days after the injections these quickly develop to great size and activity 3 Appearance of clasmatocytes about five days after the injections 4 Appearance of epithelioid cells and of transitional forms between them and both monocytes and clasmatocytes about eight days after the injections 5 Appearance of giant cells of both foreign body and epithelioid types about ten days after the injections Injection of the connective tissues with lipids prepared from egg yolk and from brains causes focal increases of macrophages similar to those caused by the injection of other foreign bodies In contrast to the degenerative changes produced in the macrophages in the latter case, however the cells become hyperactive physiologically in the areas injected with the lipids and show no evidences of degeneration into epithelioid and giant cells These lipids are quickly removed from the areas of injection without residual modification of the tissues

Gonorrhea as a Mask for Early Syphilis—Kemp and Shaw studied 1,000 cases of acute gonorrhea to determine its role in masking or altering the presence of primary syphilis They found that 155 (15.5 per cent) of the group had syphilis, of whom forty-one (26.4 per cent) had early syphilis contracted simultaneously with gonorrhea In every instance of primary syphilis the clinical diagnosis was made by detection of the chancre and in not a single instance did it depend only on the development of a positive blood Wassermann reaction Of nineteen patients with secondary syphilis, only three were unaware of the eruption Among the forty-nine patients with late syphilis who were unaware that they were infected, only thirteen (26.5 per cent) gave a history of a previous attack of gonorrhea Of the sixty-one patients in whom syphilis had been diagnosed before admission, only thirteen (21.3 per cent) had received adequate treatment Thirty-four of the 1,000 patients had genital lesions that were proved by repeated dark-field examinations and blood Wassermann follow up to be non-syphilitic There were no instances of 'symptomless infection' with syphilis occurring simultaneously with gonorrhea

American Journal of Tropical Medicine, Baltimore

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- Development of Tropical Medicine E B Vedder Washington D C —p 1
- Necessity for More Accurate Statistics Regarding Distribution and Incidence of Tropical Diseases in the United States C F Craig New Orleans —p 15
- Intestinal Parasite Infections of the Ambulatory White Clinic Population of New Orleans E C Faust and W H Headlee New Orleans —p 25
- Incidence of Intestinal Parasites in Five Hundred and Thirty Seven Individuals on Relief Rolls in the City of Athens Ga and Vicinity E E Byrd Athens Ga —p 39
- Six New Cases of Chagas Disease in Panama Review of Previous Cases C M Johnson and G T DeRiva Panama Republic of Panama —p 47
- Natural Infection of Trypanosoma Hippicum Darling in the Vampire Bat Desmodus Rotundus Murinus Wagner C M Johnson Panama Republic of Panama —p 59
- Transmission of Quartan Malaria Through Two Consecutive Human Anopheline Passages M T Boyd and W R Stratman Thomas Tallahassee Fla —p 63
- Comparative Susceptibility of Anopheles Quadrimaculatus Say and Anopheles punctipennis Say to Plasmodium Vivax Grassi and Teletti and Plasmodium falciparum Welch M F Boyd and S T Kitchen Tallahassee Fla —p 67
- Yellow Fever Virus Encephalitis in African and Asiatic Monkeys W Lloyd and A F Whaffy Lagos Nigeria Africa —p 73
- Infectious Intertrigo J K Howles New Orleans —p 77
- Variation of Cosmopolitan Diseases in Tropical and Temperate Zones A E Larsen San Francisco —p 91

Infectious Intertrigo—Howles shows the protein nature of the infectious intertrigos in his survey of 2,086 clinically and microscopically positive cases Cocci, yeast and fungi were all proved to be etiologic factors either singly or in combina-

tion Of the 600 cultures studied mycologically, 10 per cent were positive for pathogenic fungi To enable a fair evaluation of the therapeutic measures employed, various remedies (keratolytic agents, mechanical abrasives, chemical abrasive agents, fungistatic and germicidal agents and physical agents) were tested for adequate periods of time under controlled conditions The rational therapy of infectious intertrigo cannot be found in one set remedy Each stage of these eruptions must be managed differently, therefore the discovery of a panacea is improbable Conservative treatment in the acute stages is essential Hygienic and prophylactic measures seem to be the ultimate answer to the question

Archives of Internal Medicine, Chicago

57 1240 (Jan) 1936

- Cystic Disease of Lung H Hennell New York —p 1
- *Congenital and Familial Clubbing of Fingers and Toes with Possibly Inherited Tendency J T Witherspoon Indianapolis —p 18
- *Effect of Ergotamine Tartrate on Pressure of Cerebrospinal Fluid and Blood During Migraine Headache J L Pool T J C von Storch and W G Lennox Boston —p 32
- Chemical Studies of Acute Poisoning from Mercury Bichloride T Sollmann and Nora E Schreiber Cleveland —p 46
- Cholesterol Content of Whole Blood in Patients with Arterial Hypertension A H Elliot and F R Nuzum Santa Barbara Calif —p 63
- Chlorophyll and Regeneration of Blood Effect of Administration of Chlorophyll Derivatives to Patients with Chronic Hypochromic Anemia A J Patek Jr Boston —p 73
- Cytologic Examination of Nasal Smears of Sensitized and Nonsensitized Persons with Nasal Symptoms with Especial Reference to the Eosinophil Count and to Simultaneous Blood Counts D M Cowie and B Jimenez Ann Arbor Mich —p 85
- *Rheumatic Cardiac Disease Association of Active Rheumatic Fever with Heart Failure S C Werner New York —p 94
- Clinical Studies of Respiration V Relation of Dyspnea and Air Hunger to Changes of Expiratory Volume of Chest J A Greene and R H Heeren Iowa City —p 100
- Carbohydrate Intolerance and Intestinal Flora II Bacteriologic Studies of Fecal Flora J B Gunnison T L Althausen and M S Marshall San Francisco —p 106
- Renal Lesions in Staphylococcus Aureus Infections and Their Relation to Acute Glomerular Nephritis R H Rigdon Durham N C —p 117
- Auriculoventricular Heart Block Due to Bilateral Bundle Branch Lesions Review of Literature and Report of Three Cases with Detailed Histopathologic Studies W M Yater V H Cornell and T Clayton Washington D C —p 132
- *Erythrocyte Fragility in Pneumonia R J Needles Detroit —p 174
- Allergy Review of Literature of 1935 I M Rackemann, Boston —p 184
- Critical Review of Literature on Chronic Rheumatism J L Miller Chicago —p 213

Congenital and Familial Clubbing of Fingers—Witherspoon points out that clubbing of the fingers and toes has been recognized as a clinical manifestation of intrathoracic disease from the earliest times Hippocrates described the condition as occurring with advanced phthisis and empyema and emphasized the importance of the changes as diagnostic of purulent pleural effusion Many subsequent authors have described clubbing of the fingers associated with chronic disease of the heart or lungs, but it is still rare in medical literature to find the condition mentioned as being of primary origin The author considers his case of simple clubbing of the hands and toes apparently of primary origin He states that it is familial possibly hereditary, is congenital as far as can be determined from the history, and supposedly is the first instance of simple familial and congenital clubbing of the fingers and toes in a Negro to be described in medical literature

Effect of Ergotamine Tartrate on Cerebrospinal Fluid Pressure—Pool and his co-workers thought that a study of the physiologic effects of ergotamine on patients during a migraine headache might uncover the cause of the relief and hence suggest the cause of the migraine With this thought in mind they have observed the effects of ergotamine tartrate on the pressure of the cerebrospinal fluid and of the arterial blood, on the rate of the heart and on the symptoms of patients who were suffering from an attack of migraine As a control, similar observations were made on a group of patients not subject to migraine It was found that the average initial spinal fluid pressure during headache was 113 mm, a figure 14 mm lower than the average pressure for the control group Following the injection of ergotamine, there was in both groups a prompt fall in pulse rate and a rise in systolic and diastolic blood pressure and in spinal fluid pressure After injection of

ergotamine in the patients having headache, the average rise in the level of spinal fluid pressure was 13 mm, in the controls the level rose 31 mm. The relief from headache which twelve of the fifteen patients with migraine experienced could not be directly or entirely explained by the observed changes in cerebrospinal fluid pressure or in the circulation. The observations do not lend support to the theory that in migraine headache there is a generalized spasm of cerebral vessels or an abnormality of intracranial pressure. It is possible that ergotamine acts directly as a sedative on the sensory nerves which supply intracranial tissues, particularly those nerves which accompany arteries or supply the dura, or that it acts directly on autonomic nuclei in the hypothalamus. This explanation does not however take into account the fact that ergotamine relieves not only the headache but also other symptoms, such as scotoma, hemianopia, paralysis and malaise.

Rheumatic Cardiac Disease—Werner studied 100 consecutive ward cases of rheumatic cardiac disease in which there was heart failure, seventy-five cases of the same condition with necropsy and fifty cases of syphilitic cardiac disease included for comparative purposes. Signs of active rheumatic fever have been demonstrated in 45 per cent of the clinical cases of rheumatic cardiac disease. Activity has been suspected in an additional 21 per cent. In the pathologic material active lesions have been found in 66 per cent of the cases of rheumatic cardiac disease. An exertional or mechanical factor associated with cardiac insufficiency was definite in only 8 per cent of the cases of rheumatic cardiac disease and 7 per cent of the cases of syphilitic cardiac disease. There was no demonstrable factor in the remaining 26 per cent and 48 per cent of the cases of rheumatic and syphilitic cardiac disease, respectively. Infection of the respiratory tract is concomitant with the loss of cardiac reserve in 50 per cent of the clinical cases of rheumatic and syphilitic cardiac disease. A seasonal rise in the number of patients with rheumatic fever admitted to the hospital for cardiac insufficiency is indicated corresponding to the known statistics on morbidity for rheumatic fever in New York City. The observation is not demonstrable in the series with syphilitic cardiac disease.

Erythrocyte Fragility in Pneumonia—Needles discusses the fragility of the erythrocytes in pneumonia and describes a modified technic for their determination. It is believed that the use of the test may open new avenues in the investigation of pneumonia, and it is suggested that the test be employed in cases of other infections particularly of the pulmonary type. A difference in climate and race may cause some difference in results. In pneumonia, depending on the severity of the illness and on its toxicity or the amount of lung tissue involved, the resistance of the red blood cells to hemolysis becomes greater. When the disease is mild, this may amount to as little as from 0.02 to 0.04 per cent, while when it is severe it may be as great as 0.14 per cent. In fatal cases the resistance of the erythrocytes is very great, becoming progressively more marked as the disease advances. There is a possible use for such an examination as an aid to prognosis. Mild pneumonia causes only slight changes in fragility. Therefore it may be assumed that as long as the erythrocyte resistance remains above 0.4 per cent the prognosis is good. However the author has seen patients recover in whom the point of beginning hemolysis had been as low as 0.34 per cent. The crisis in fragility lags from one to three days behind the crisis in fever, and it is not unusual to see low fragility readings from one to three days following the restoration of the normal temperature. The mechanism is not clear. It seems likely that it is a phenomenon intimately related to the amount of lung tissue consolidated and thus connected with the oxygen carbon dioxide equilibrium of the blood. The cases that the author reports occurred in Brazilians and there may be some racial idiosyncrasy. Most of the patients in this region are carriers of chronic malaria, many have syphilis, and almost all have one or more types of intestinal parasites. In nearly all the spleen is enlarged from one to four times. The series of normal patients have shown that the normal limits for erythrocyte fragility in this area are the same as in more northern climates and in the white race, i. e., from 0.36 to 0.44 per cent and would tend to show that the same pathologic reactions would also be present. This is not conclusive.

Archives of Pathology, Chicago

21 1126 (Jan) 1936

- ***Etiology of Amyloid Disease with Note on Experimental Renal Amyloidosis** C M Eklund and H A Reimann Minneapolis—p 1
- Parathyroid Glands** I Study of the Normal Gland J R C Morgan Boston—p 10
- ***Myasthenia Gravis** Study of Postmortem Observations Including Demonstration of Gram Positive Bacteria (Streptococci) In and Between Muscle Fibers H R Butt Rochester Minn—p 27
- Role of Pia in Encephalomyelitis and Meningo-Encephalitis** H W Williams Schenectady N Y—p 35
- Osteoblastoma of Kidney** Histologically Identical with Osteogenic Sarcoma R B Haining and I C Poole Los Angeles—p 44
- Tumors of Ovary with Especial Reference to Benign Fibro-Epithelioma (Brenner Tumor)** B H Neiman Chicago—p 55
- Experimental Thrombopenic Purpura in Dog** L M Tocantins Philadelphia—p 69
- Primary Tuberculous Infection of Intestine** H S Reichle Cleveland—p 79

Etiology of Amyloid Disease—The experiments of Eklund and Reimann show that constant hyperglobulinemia induced by repeated injections of sodium caseinate preceded the development of amyloid disease in each of five rabbits. The observations support the theory that chronic hyperglobulinemia is important in the development of amyloidosis of the secondary type. During long periods of hyperglobulinemia an attempt is made by the cells to remove the excess of globulin from the blood. If the amount is not too great or too persistent, the excess can be disposed of successfully. However, if the cells become overwhelmed or if they cease to function owing to injury or disease, excess amounts are deposited in increasing quantities until the condition is incompatible with life. Furthermore, experimental studies and clinical observations show beyond doubt that the process is reversible. If the conditions responsible for the hyperglobulinemia are removed, provided the amyloidosis is not too extensive, resorption of the substance and recovery may occur. Histologic sections of the kidneys of the rabbits studied showed extensive destruction of glomeruli caused by the deposit of amyloid substance in the tufts. The tubules were generally dilated and plugged with amyloid. In four rabbits it appeared that the depletion of the albumin content of the blood was caused by the escape of abnormally large amounts of albumin through the damaged kidneys. In the other rabbit a diminution in the amount of blood albumin was noted nine months before marked albuminuria occurred. In this rabbit in contrast with the others there was extensive infiltration of the liver and spleen, which may have been partly responsible for the diminution in the amount of blood protein. The symptoms, signs, laboratory data and pathologic changes in the kidneys of rabbits in the terminal stage of amyloidosis were typical of those noted during renal amyloidosis and uremia in man in regard to albuminuria, normal blood pressure, normal eyegrounds, retention of nonprotein nitrogen, positive congo red test and lowering of the blood protein level, with marked loss of albumin and relative or absolute increase in the amount of globulin. Edema was not noted. Extensive renal amyloidosis developed in each animal, which appeared to be heralded clinically by albuminuria and a drop in the blood protein level. Both renal and hepatic lesions are known to modify the blood protein level. It is misleading, therefore, to attempt to correlate the changes in the blood protein level found in advanced amyloidosis with the etiology of the disease. The conditions are different during the incipient period of the disease. The amount of blood protein, especially that of the globulin, was markedly above normal. In the late stage, when evidence of renal disease appeared, the total protein content was reduced below the normal level, because of the marked diminution of the albumin content.

Myasthenia Gravis—When performing a necropsy in a case of myasthenia gravis shortly after a similar examination had been made in a case of dermatomyositis, Butt observed that microscopic study of the muscles in the two cases revealed certain resemblances. The collections of lymphocytes in the muscles in both cases suggested a chronic infection. The inference was that the underlying cause of myasthenia gravis was a type of infection that became localized in the muscles in a manner similar to the localization of rheumatism in joints and also that, since the lesions in myasthenia gravis, scleroderma and dermatomyositis often present similar pictures, they might all be related to a common type of infection with different local-

izing properties. This observation led to the study of the pathologic changes in seven cases of myasthenia gravis in which necropsy had been performed. In muscles from the bodies of seven patients who died of causes other than myasthenia gravis, no bacteria could be observed, but gram-positive bacteria resembling streptococci were noted in the seven cases of myasthenia gravis. The possibility of contamination of the tissues by the microtome knife or by fluids used in preparation was excluded. Collections of lymphocytes were observed in all but two of the seven cases of myasthenia gravis. In all the cases there was a form of degeneration in some of the sections of muscle. Thymomas were observed in two cases. The fact that gram-positive organisms were observed in the muscles of the patients who had myasthenia gravis and were not seen in the muscles of a similar number of control subjects suggests that these bacteria may be the origin of the toxin that produces the characteristic fatigability in this disease.

Canadian Medical Association Journal, Montreal

34 1 124 (Jan.) 1936

- Avertin. Analysis of Sixteen Hundred Administrations. F. E. Shipway. London, England—p. 2.
- Experimental Production of Coronary Thrombosis and Myocardial Failure. G. E. Hall, G. H. Ettinger, and F. G. Banting. Toronto—p. 9.
- Subtemporal and Suboccipital Myoplastic Craniotomy. W. Cone and W. Penfield. Montreal—p. 16.
- Embryologic and Clinical Aspect of Double Ureter. A. B. Hawthorne. Montreal—p. 21.
- Further History of Care and Feeding of the Dionne Quintuplets. A. R. Dafoe. Callander, Ont.—p. 26.
- *Treatment of Congenital Syphilis with Stovarsol. A. M. Davidson and A. R. Birt. Winnipeg, Manit.—p. 33.
- Surgical Emergencies in General Practice Exclusive of Trauma. R. R. Graham. Toronto—p. 36.
- Obesity and Its Treatment. W. R. Campbell. Toronto—p. 41.
- Induction of Labor by Rupture of Membranes. E. M. Blain. Vancouver, B. C.—p. 49.
- Administration of Iron. C. H. W. Lucas and V. E. Henderson. Toronto—p. 53.
- Is Cardiovascular Renal Disease Increasing as Cause of Death in Canada? M. T. Macklin. London, Ont.—p. 56.

Treatment of Congenital Syphilis.—Davidson and Birt state that acetarsone (stovarsol) was introduced at the Winnipeg Children's Hospital in 1932 and that the results obtained since then have been superior to those produced by older methods of treatment. The decided increase in cases cured assures this drug a place in the therapy of congenital syphilis. In addition it offers the following advantages over other forms of treatment: 1. The oral method is much superior to the intravenous or the intramuscular route in children. 2. Syphilis can be cured only by regular treatment. In the preacetarsone series there were many at the clinic irregular in attendance. Since the introduction of acetarsone and the cessation of painful treatments there has been no difficulty in having the children attend the clinic regularly. 3. There have been fewer toxic effects in this series than are usually found with arsphenamine and neoarsphenamine. Those that have been produced were readily controlled by dosage. 4. Treatment is much cheaper than by other methods and there is no additional equipment necessary for administration. While the results obtained in their series of thirty-seven cases have been highly satisfactory (more than twice as many cures were obtained in one-third the time required for preacetarsone treatment) it seems to the authors that better results might be obtained by using a graduated dosage of acetarsone. It is their intention to treat a series of cases using the method advocated by Bratusch-Marrain.

Georgia Medical Association Journal, Atlanta

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- Treatment by the General Practitioner of the More Common Diseases of the Nervous System. L. F. Barker. Baltimore—p. 1.
- Chest Conditions in Infants and Children. W. W. Anderson. Atlanta—p. 12.
- Treatment of Acute Lobar Pneumonia. Review of Five Year Records of Pneumonia in Atlanta Hospital. C. C. Aven and A. W. Hobbs. Atlanta—p. 15.
- Perforated Peptic Ulcer. Study of Thirty Two Cases. J. C. Patterson. Cuthbert—p. 20.
- Complications of Treatment of Syphilis in Pregnancy. Report of Three Cases of Arsenical Encephalitis Complicating Such Treatment. E. B. Wood. Augusta—p. 25.

Illinois Medical Journal, Chicago

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- Preventive Medicine in the Medical Curriculum. Historical Perspective. D. J. Davis. Chicago—p. 21.
- Roentgen Diagnosis of Intracranial Lesions. A. Hartung and T. J. Wachowski. Chicago—p. 25.
- Epidemic Pleurodynia in Illinois. T. Kirkwood. Lawrenceville and C. G. Stoll. Sumner—p. 29.
- The Problem of the Asthmatic Child. F. W. Schlutz. Chicago—p. 33.
- *Histidine Monohydrochloride Therapy of Gastroduodenal Ulcer. I. F. Volini. Chicago and R. T. McLaughlin. Price, Utah—p. 39.
- Diverticula of Colon. H. C. Ochsner, Waukegan and J. A. Barger. Rochester, Minn.—p. 45.
- Management of Lesions of Female Urethra. L. W. Riba. F. A. Christensen and D. K. Hibbs. Chicago—p. 47.
- *Leukopenic Index in Intractable Asthma. M. Zeller. Chicago—p. 54.
- Roentgen Study of Lesions of Urinary Bladder. P. B. Goodwin. Peoria—p. 58.
- Petrolatum Oil Pneumonia in an Adult. F. E. Ball. Chicago—p. 67.
- Merits of Blood Transfusion in Septicemia. F. Stenn. Chicago—p. 65.
- Modern Principles in Treatment of Early Syphilis. H. J. Burstein. Decatur—p. 68.
- Malunion of Colles's Fracture and Its Surgical Correction. T. G. Murphy. Chicago—p. 72.
- Value of Excretion Urography as Illustrated by Some Interesting Cases. A. C. Perley. Quincy—p. 75.
- Hypertyroidism Masked as Essential Hypertension. S. K. Rolin. Chicago—p. 77.
- *Treatment of Hemorrhage in Hemophiliacs and Nonhemophiliacs with Theelin in Oil. Preliminary Report. E. B. de Silva. Rock Island—p. 81.
- The Colon as Source of Abdominal Pain. L. C. Gatewood. Chicago—p. 84.
- X Rays in Detection of Pathology of Cervix, Corpus Uteri and Oviducts. B. H. Orndoff. Chicago—p. 88.
- Cause for Removal of Eye. L. L. Mayer. Chicago—p. 91.
- Medical Adjuncts in the Management of Increased Intraocular Tension. J. E. Lebensohn. Chicago—p. 94.

Histidine Monohydrochloride Therapy of Gastric Ulcer.—Volini and McLaughlin give the results of seventy-three patients treated by parenteral histidine monohydrochloride, observed over a period of six months. After a six months check-up, 79 per cent of the cases were clinically improved and 21 per cent were considered failures. The percentage of favorable responses varied inversely with the duration of the symptoms. It is very difficult to evaluate the mode of action whereby histidine produces the beneficial result. Weiss and Aron expressed the opinion that histidine promotes, restores and maintains the epithelial integrity of the gastric and duodenal mucosa. The absence of histidine, an essential amino acid not synthesized in the human body, thus produces a metabolic defect, which is restored by parenteral injection in this treatment. The possibility of a different mode of action has been investigated by the authors in studies on ulcer production and prevention which are in course of publication. They produced gastric ulcers in rats by repeated injections of histamine dihydrochloride. They also demonstrated ulcer formation in rats by the use of repeated histamine enemas. These experimental ulcers did not occur when the animals were protected by previous injections of histidine monohydrochloride. Their observations suggest, first, a working hypothesis for ulcer production that is by repeated histamine stimulation, peptic ulcers are produced. Further scientific investigation is being made. Secondly, another working hypothesis is permissible, that histidine stimulates the production of histaminase, which inactivates histamine. Gastrin (gastric secretin) action is inhibited, thus reducing gastric juice acidity, gastric secretion and possibly peptic activity. This could explain the change in physical character in the gastric secretion. The diminution in gastric motility could likewise be attributed to this action.

Leukopenic Index in Intractable Asthma.—Zeller performed 106 leukopenic index determinations on twelve patients in whom the usual diagnostic procedures failed to reveal sufficient observations to effect relief of symptoms. Of the fifty-four proved clinically positive instances, thirty-seven showed negative skin tests with a decrease in the white cell counts of more than 1,000 cells. This represents 34.91 per cent of the total number of cases tested and 68.52 per cent of the clinically positive cases. An increase in leukocytes with proved positive clinical response but negative skin tests was presented in twelve foods (11.32 per cent) of the total number and 22.22 per cent of the clinically positive instances. In three clinically positive foods the leukopenic response corresponded with the positive skin test while in two clinically positive foods an increase of

leukocytes with positive skin tests was noted. Of the thirty-nine clinically negative instances, twenty-three (21.70 per cent) of the total number (106) tested showed a digestion leukocytosis associated with negative skin test. Six clinically negative foods with positive skin tests also showed a leukocytosis, while one showed a leukopenia. Nine clinically negative foods showed a leukopenia with negative skin tests. Five of the twelve cases of asthma eventuated in good results clinically. Three had responded fairly well to the usual allergic measures, but after utilizing information gained by the leukopenic index determinations improved to the extent of being classified under good results. The remaining two cases presented no improvement prior to leukopenic index determinations. Four cases in which fair results were obtained had shown no clinical improvement until food eliminations based on leukocyte counts were made. No improvement was obtained in three cases. One of these failed to show a single food producing blood counts toward the positive phase. The remaining two failed to respond clinically even after eliminating foods with leukocytic indexes in the negative phase.

Treatment of Hemorrhage with Theelin in Oil—De Silva used theelin in oil in the treatment of hemophilic and nonhemophilic hemorrhage. With the intramuscular use of one ampule, 1,000 international units per cubic centimeter of theelin in oil every two to three hours, great improvement if not complete cessation, was apparent after the injection of from three to four ampules. The use of theelin has proved of exceptional value in the author's hands but must be given as often as every two hours in one ampule doses unless in extreme conditions when he advises two ampules for the first dose. Several patients have complained of severe stinging at the site of injection, which he relieved by drawing the theelin into the syringe and then 4 to 5 mm. of a 1 to 2 per cent solution of procaine hydrochloride, so that on injecting, the amount of procaine was injected first and after four or five seconds the rest of the syringe, with absolutely no pain to the patient who even asked if the hypodermic had been given. Several cases are cited. The author is of the opinion that the ovaries in the female are the restrainer of the hemophilic conditions but that their destruction or removal may allow hemophilia to occur.

Journal of Biological Chemistry, Baltimore

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- Study of Serum Lipids by Microgravimetric Technique W R Wilson and A E Hansen New Haven Conn —p 457
- Monohydroxypalmitic Acid in Butter Fat A W Bosworth and G E Helz Columbus, Ohio —p 489
- Determination of Stereochemical Purity of L-Cysteine G Toennies and Mary A Bennett Philadelphia —p 497
- Production of Deficiency Involving Cystine and Methionine by Administration of Cholic Acid A White New Haven Conn —p 503
- Phosphatase Content of Blood Serum and Tissues in Rat Following Administration of Vitamins D and A P D Crumm and J W Strayer Evansville Ind —p 511
- Adenine Nucleotide Content of Human Blood II Correlation with Hemoglobin Mary V Buell, Baltimore —p 523
- Chemistry of Lipids of Yeast III Lecithin and Cephalin L F Salisbury and R J Anderson New Haven Conn —p 541
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- Influence of Feeding Amino Acids and Other Compounds on Excretion of Creatine and Creatinine M Bodansky with technical assistance of Virginia B Duff Galveston Texas —p 615
- Studies on Pancreatic Lipase I S S Weinstein and A M Wynne Toronto —p 641
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- Determination of Thiol and Disulfide Compounds with Especial Reference to Cysteine and Cystine VII Application of Modified Phospho Tungstic Acid Method for Determination of Cysteine Cystine and Ascorbic Acid in Urine K Shinohara and K E Padic Philadelphia —p 709
- Chemistry of Lipids of Tubercle Bacilli VIII Studies on Phthioc Acid M A Spielman and R J Anderson New Haven Conn —p 759

Journal of Immunology, Baltimore

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- *Study of Pneumococcus Toxins A F Coca with assistance of H W Straus and Ella F Grove New York —p 1
- Two Antigens of High Molecular Weight Hemocyanins of Limulus Polyphemus and Fulgur Canaliculatus S B Hooker and W C Boyd Boston —p 33
- Existence of Antigenic Determinants of Diverse Specificity in Single Protein III Further Notes on Crystalline Hen Ovalbumins and Duck Ovalbumins S B Hooker and W C Boyd Boston —p 41
- Relation of Adrenal Glands to Immunologic Processes Effect of Cortico Adrenal Extract on Hemolysis Production in Normal Adult Laboratory Animals C A Fox and R W Whitehead Denver —p 51
- Differentiation in Suissetifer Group and on Resistance to Phage P Levine and A W Frisch Madison, Wis —p 63
- Specificity of Multiplication of Bacteriophage A W Frisch and P Levine Madison Wis —p 89

Study of Pneumococcus Toxins—Coca demonstrated a toxin in filtrates of pneumococcus cultures the injection of which in young children caused a rise in temperature, which reached 105 F in the more susceptible. All of thirty-four children less than 3 years of age, excepting two who previously suffered from either bronchopneumonia or a severe bronchitis were found susceptible to the type I toxin. All of thirty-one persons suffering from or convalescent from pneumococcal pneumonia were found immune to the type I toxin (skin test). The toxin seems to be type specific. It is not the type-specific polysaccharide. Cultures grown in the absence of artificially supplied carbon dioxide have been found to contain toxin which, however, seemed not to be capable of stimulating antitoxin production in human beings. Two injections in children were followed in the majority of instances by prompt antitoxin production (one or two weeks). Serum from two pneumonia convalescents neutralized the pneumococcus type I toxin.

Journal of Lab and Clinical Medicine, St Louis

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- *Behavior of Eosinophils in Rheumatic Fever G Friedman and E Holtz New York —p 225
- Influence of Sucrose Ingestion on Amino Acid Nitrogen and Urea Nitrogen Concentration of Blood E G Schmidt and J S Eastland Baltimore —p 233
- Chronic Hypertension of Nervous Origin J J Izquierdo Mexico —p 235
- Abridged Key to Species of Pathogenic Fungi T W Shaw Richmond Va —p 243
- Fermentation and Gas Production by Bacillus Coli in Simple and Mixed Sugars Eugenia Valentine and K G Falk New York —p 257
- *Further Contribution to Liver Kidney Syndrome F C Helwig and C B Schutz Kansas City Mo —p 264
- Intranasal Application of Insulin R H Major Kansas City Kan —p 278
- Fungicides I Influence of Hydrogen Ion Concentration on Growth of Yeastlike Organisms H C Hesselstine and W J Noonan Chicago —p 281
- Id II In Vitro Tests with Number of Chemicals on Yeastlike Organisms and Other Fungi H C Hesselstine and E W Hopkins Chicago —p 288
- *Thoracic Duct Lymph Pressure in Concretio Cordis Experimental Study A Blalock and C S Burwell Nashville Tenn —p 296
- Diuretic Action of Mercupurin L G Steuer and S E Wolpaw Cleveland —p 298
- Preparation of the Krueger Undenatured Bacterial Antigens H M Powell and W A Jameson Indianapolis —p 301
- *More Sensitive Complement Fixation Test for Gonorrhea J Koopman and I D Falker New York —p 308
- Inadequacy of Present Complement Titrations J Koopman and I D Falker New York —p 312
- Metabolism Chamber Which Automatically Maintains a Constant Partial Pressure of Oxygen H F Pierce New York —p 317

Behavior of Eosinophils in Rheumatic Fever—Friedman and Holtz present seven case histories illustrating four features of the behavior of the eosinophils during the course of rheumatic infection. These are (1) the disappearance of the eosinophils from the peripheral circulation during accessions of acute polyarthritides and carditis, (2) the reappearance of the eosinophils and eosinophilia during the early stages of recovery, (3) persistent eosinophilia in cases of continued activity and (4) transient hypo eosinophilia or aneosinophilia during minor exacerbations in cases of chronic rheumatic heart disease. The behavior of the eosinophilic polymorphonuclear leukocytes in rheumatic fever is similar in all respects to that seen in other infections. In so-called chronic rheumatic heart disease the presence and absence of the eosinophils and the occurrence of eosinophilia have the same significance as in other infections. The concept of rheumatic heart disease as a chronic infection with frequent acute exacerbations of variable degree offers the

key to an understanding of the apparent complexity of the eosinophilic behavior. Thus repeated and continuous absence of the eosinophils from the blood over a period of time was always found to be associated with other evidences of a severe and active infection. In the majority of cases showing continuous aneosinophilia or hypo-eosinophilia of this type the patient was ill enough to be confined to bed. Conversely, when the eosinophils were continuously present in normal or increased numbers, the infection was always subsiding. Eosinophilia indicates convalescence which in rheumatic fever is admittedly very often a protracted process. Occasional aneosinophilia occurring in patients who usually present normal or high counts undoubtedly indicates miniature exacerbations of activity which give rise to little or no clinical disturbance. The eosinophil behavior in rheumatic fever affords another point of identity and the analogy constitutes further evidence in favor of the allergic hypothesis. Continued observation of the behavior of the eosinophils, over long periods of time in the less acute cases, is a reliable index of activity of rheumatic infection and is valuable as a basis, in some cases, for immediate prognosis and clinical management.

Liver-Kidney Syndrome—Their observations in two cases illustrative of the liver-kidney syndrome suggest to Helwig and Schutz the idea that the pathogenesis of the syndrome depends primarily more on the development of some specific type of intracellular hepatic damage than on the degree of actual morphologic cellular damage to which ordinary cell injury may extend. When they consider the wide variety of liver lesions and the more constant sequence of clinical events in which the renal picture assumes the most prominence as the syndrome progresses, it appears more and more convincing that some toxin is the causative factor. This toxin may have been produced as the result of a perversion of function of damaged liver cells or by a lack of some physiologic detoxifying function of the liver parenchyma that permitted the production or the accumulation of a substance highly toxic to renal function. A hemorrhagic diathesis is also not a rare complication in certain cases of renal disease when no accompanying liver lesion is present. At present, however, the true etiology of such bleeding is not completely understood. Experimentally uniform results could not be obtained when an attempt was made to reproduce the liver-kidney syndrome in animals.

Thoracic Duct Lymph Pressure in Concretio Cordis—Blalock and Burwell produced Pick's disease in two dogs by the introduction of aleuronat into the pericardial cavity. This resulted first in the formation of fluid in the pericardial cavity and later in the fusion of the pericardium and epicardium. The venous pressure rose and fluid accumulated in the peritoneal cavity. Three weeks following the introduction of aleuronat into the first dog, the pressure in the external jugular vein was 120 mm of water and that in the femoral vein 140 mm. Under morphine narcosis the cerebrospinal fluid pressure was found to be 240 mm of water. Under ether anesthesia the thoracic duct which was markedly dilated was exposed in the neck. Blood was present in the duct for a distance of approximately 1 cm peripheral to its entrance into the vein. The pressure in the duct was found to be 150 mm of water, while that in the subclavian vein was 165 mm. The animal was killed and a typical instance of concretio cordis was demonstrated. In the second experiment the animal appeared ill seventeen days following the introduction of aleuronat. The pressure in the external jugular vein was 155 mm of water and that in the femoral vein 175 mm. The cerebrospinal fluid pressure was 200 mm. Under ether anesthesia a markedly dilated thoracic duct was exposed. A small amount of blood could be seen during expiration in the duct at its entrance into the vein. The pressure in the thoracic duct was found to be 200 mm of water and that in the subclavian vein 175 mm. Following the removal of the needle from the duct a pulsating stream of lymph shot out through the hole of the needle during each expiration. Several hundred cubic centimeters of lymph escaped during the thirty minutes that the duct was exposed. The incision was closed and the animal died two days later. There were 1100 cc of blood tinged fluid in the pleural cavities and 90 cc of thin yellowish fluid in the peritoneal cavity. The pericardium and epicardium were fused and thickened. There was an exudate covering the liver.

Sensitive Complement Fixation Test for Gonorrhea—Koopman and Falker devised a complement fixation test for gonorrhea that requires a readjustment of the quantities of reagents used and a new interpretation of readings. In a proper gonorrhea fixation test it is imperative that the readings be made at the point where the concentration of complement approaches its threshold value when the concentration of complement is reduced, the test cannot be completed in the usual manner because the control tubes will be anticomplementary and the reaction tubes will not show definite positive or negative reactions. A properly planned titration demonstrates how these difficulties may be overcome. Therefore when the first requisite of gonorrhea fixation tests is fulfilled, i. e., the use of reduced concentration of complement, to get clearer control tubes and clear cut negative reactions, the cell suspensions must be lighter than those used in present work. Furthermore, as the density of the suspensions is decreased, hemolysis disappears in the positive reaction tubes and definite positive reactions are at last attained. The authors have found that highly satisfactory results are obtained when one fifth of the reacting complement fixation solution is made up of sensitized cells. The sensitized cell suspension consists of one part of 5 per cent cells and one and one-half parts of hemolysin of the proper titer. The standard that determines their readings is that complement fixation should be judged by the difference between the amount of complement absorbed nonspecifically in the control tube and the amounts fixed both nonspecifically and specifically in the reaction tubes. An essential difference between the proposed test and the classic test is that they do not attempt a quantitative estimation of complement fixation by varying the amount of serum but by changing the concentration of the complement in the hemolytic system and by estimating the amount of fixation by the threshold value of the complement left over. In this new test, advantage is taken of the fact that in hemolytic systems complement acts according to its concentration rather than its absolute quantity. That quantity of complement to be used in the tests is the amount which causes almost complete hemolysis. The proper tube will have a trace of cloudiness caused by cells that have not been hemolyzed. The complement is then diluted so that 0.1 cc contains the amount indicated by the titration. It is essential that the amount of antigen used is an excess. Additional antigen should not increase the amount of fixation of the positive specimens. For ease of manipulation following the first incubation, the saline and sensitized cell suspension should be mixed together and added by a single pipetting, and the specimens reincubated. This also makes for increased accuracy. In a minus reaction, the first reaction tube is as much hemolyzed as the control. In a plus reaction, the first reaction tube colorimetrically shows definite fixation against the control. The second reaction tube approaches complete hemolysis. In a two plus reaction, the first reaction tube has only a faint trace of hemolysis or is completely fixed. The second reaction tube has much hemolysis. In a three plus reaction, the first reaction tube is completely fixed. The second reaction tube has a faint trace of hemolysis or is completely fixed. The third reaction tube has definite hemolysis. In a four plus reaction, all the reaction tubes are completely fixed.

Journal of Pediatrics, St. Louis

8 1134 (Jan.) 1936

- Normal Cervicic Acid (Ascorbic) Acid Determinations in Blood Plasma and Their Relationship to Capillary Resistance A. F. Abt, C. J. Farmer and I. M. Epstein Chicago—p. 1
- Indigo Carmine for Quantitative Determination of Glucose in Cerebrospinal Fluid D. J. Cohn and A. Levinson Chicago—p. 20
- Isozyme Content of Blood W. L. Bradford and J. B. Roberts Rochester N. Y.—p. 24
- Significance of Individual Variations A. H. Washburn Denver—p. 31
- Congenital Shortening of Esophagus J. B. Gillespie Urbana Ill.—p. 38
- *Prolonged Use of Acetylsalicylic Acid with Addition of Magnesium Oxide in Treatment of Rheumatic Infection in Children A. D. Kaiser Rochester N. Y.—p. 41
- *Certain Physical and Physiologic Aspects of Adolescent Development in Girls Helen B. Pryor San Francisco—p. 52
- Fibroma of Mesentery Report of Case in a Six Day Old Infant O. C. Bruton Nashville Tenn.—p. 63
- Childhood Leukemia M. L. Pierce Chicago—p. 66

Use of Acetylsalicylic Acid and Magnesium Oxide in Rheumatic Infection—Kaiser attended two groups of rheumatic children (seventy-five in each) with similar manifestations over a period of from six to twelve months. The treated group

received daily from 10 to 15 grains (0.65 to 1 Gm) of acetylsalicylic acid with magnesium oxide. This group showed a decided improvement over the untreated group in the children who had rheumatic pains alone. The treated children with chorea likewise fared better than did the control group not so treated. No measurable benefit could be noted in the treated group who showed evidence of rheumatic carditis alone. The vague or milder manifestations of rheumatic infection were relieved in more of the treated children than in the control children. There were fewer recurrent attacks of major rheumatic manifestations in the treated group than in the control group. No untoward or unpleasant reactions were observed in any of the treated cases. It would seem that acetylsalicylic acid with the addition of magnesium oxide is preferable to other antirheumatic drugs when used over a long period of time.

Adolescent Development in Girls—Pryor made a serial study of the adolescent growth spurt in 100 girls from 9.5 to 14 years of age. Examinations extending over four years, at half-year intervals, demonstrated a period of rapid growth during the six months immediately preceding the onset of catamenia. Gain in height preceded gain in weight and was evenly distributed over a period of eighteen months. Pubescent girls averaged a height increase of 10.64 cm in eighteen months, compared to 9.38 cm for nonpubescent girls. The rate of height gain for pubescent girls during the last six months before the appearance of menses was 26 per cent faster than for nonpubescent girls. Gain in weight was specifically stimulated by approaching menses. Pubescent girls gained weight 55 per cent faster during the six months just preceding catamenia than they did during the preceding year. Girls of broad body build menstruated earlier than girls of slender build. Pubescent girls were consistently taller, heavier and broader than nonpubescent girls of similar ages in a series of 422 cases. A predominant pattern of development of pubic and axillary hair accompanied the onset of catamenia regardless of chronological age. A certain degree of enlargement of the thyroid appeared destined to accompany the first appearance of menses. A fairly constant stage of development of the breast was seen regularly at the same time. Interrelationships among certain secondary sex characteristics suggest themselves as criteria of a physiologic age which is much more constant than chronological age for predicting the onset of catamenia.

Medical Annals of District of Columbia, Washington

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- The Newer Public Health G C Ruhland Washington—p 1
The New United States Pharmacopeia (U S P XI) and the Public Health G B Roth Washington—p 5
Genito Urinary Tuberculosis W P Herbst Washington—p 12
Fundamentals of Internal Medicine Diseases of Nervous System A Schneider Washington—p 15

Psychiatric Quarterly, Albany, N Y

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Results of Ten Years of Malarial Therapy C W Hutchings Marcy N Y—p 99
Hereditary and Environmental Factors in Causation of Dementia Praecox and Manic Depressive Psychoses H M Pollock B Malzberg and R G Fuller Albany N Y—p 110
Statistical Study of Mental Diseases Among Natives of Foreign White Parentage in New York State B Malzberg Albany N Y—p 127
Psychosis Following Anesthesia S C Karlan Dannemora N Y—p 143
Auditory Hallucinations in Pri on Psychosis R Schwarz Dannemora N Y—p 149

Malarial Therapy—Hutchings deals with the report of 182 male dementia paralytica patients who were admitted to the hospital in a routine way and who were thought to be in a suitable condition for malarial therapy. Many of the patients received treatment with arsenicals as well and these are considered. Of the 182 patients sixty-six were much improved by

treatment and were discharged. There were fifty-four who improved under treatment, of this number, twenty-five returned home able to do some work, ten who were considered to be improved were not discharged and subsequently died in the hospital, and nineteen remain in the hospital today. Of the remaining sixty-two who did not show any satisfactory response to treatment, twenty-three are still in the hospital and thirty-nine are dead.

Public Health Reports, Washington, D C

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- Effect of Certain Bacterial Products on Growth of Mouse Tumor L C Fogg—p 56

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- Diets of Low Income Families Surveyed in 1933 Health and Depression Studies Number Three Dorothy G Wiehl—p 77

Science, New York

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- Iodine in Goiter Treatment R K Summerbell and F D Ayres, Chicago—p 56
Genetics Sulfhydryl and Cancer F S Hammett Philadelphia—p 57
Growth in Height and Weight in College and University Women R G Barker and C P Stone San Francisco—p 59
Ketene (CH₃CO) New Reagent for Detoxification of Vaccine J T Tamura and M J Boyd Cincinnati—p 61

Ketene for Detoxification of Vaccine—Tamura and Boyd observed that acetylation of *Bacillus dysenteriae* Shiga with ketene for half an hour detoxifies the antigen. Such an antigen can be inoculated in large doses into rabbits without producing toxic effects. Animals immunized with ketene-treated vaccine are highly resistant to doses of living or heat killed bacilli that are lethal for nonimmunized animals.

Southern Medical Journal, Birmingham, Ala

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- John Gorrie Physician Scientist Inventor H M Taylor Jacksonville Fla—p 1075
Ventriculography via Anterior Horns E F Fincher Jr, Atlanta Ga—p 1082
Accurate Subtotal Resection of Sensory Root for Relief of Major Trigeminal Neuralgia R M Klemme St Louis—p 1086
Impotence in Man Preliminary Report of New Operation for Relief of Certain Cases O S Lowsley New York—p 1091
Bilateral Complete Ureteral and Pelvic Reduplication with Ectopic Supernumerary Ureteral Orifice on One Side Without Incontinence and With Communication Between the Two Right Ureters E H Fite Muskogee Okla—p 1098
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Pediatric Training Yesterday and Today D L Smith Spartanburg S C—p 1138
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Diagnosis and Treatment of Uterine Bleeding W T Black Memphis Tenn—p 1145
Observations on Five Hundred Laparotomies in Negro Women E H Greene Atlanta Ga—p 1147
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Food Allergy and Other Food Factors in Angina Pectoris G Werley El Paso Texa—p 1156
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Necessity for Medicolegal Investigations V G Isakov, Houston Texas—p 1165
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Value of Pathologic Museum for the Teaching of Medicine E von Harum New Orleans—p 1174

Virginia Medical Monthly, Richmond

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- The Doctor and His Bill Is the Medical Profession Reactionary? A C Christie Washington D C—p 533
- Polio-myelitis in Charlottesville Va and the Adjacent County of Albemarle W W Waddell Jr and C W Purcell University—p 557
- Polio-myelitis Diagnosis of Varieties H R Masters and L E Sutton Richmond—p 565
- Collapse Therapy in Pulmonary Tuberculosis C L Harrell Norfolk—p 572
- Pre-ent Status of Physical Therapy in Practice of Medicine R Kovacs New York—p 578
- Vitamins and Their Place in Medicine S E Gunn Hopewell—p 586
- Primary Chondroma of Lung Case Report S K Livingston, Hines Ill—p 589
- War Neuroses and Lack of Evidence to Establish It F M Horsley Arrington—p 592
- Treatment of Burns with Gentian Violet R M DeHart Christiansburg—p 594
- Clinical Aspects of Destruction of Adrenal Glands G L Weller Jr Washington D C—p 595
- Improved Treatment of Appendicitis Results in Five Hundred and Two Consecutive Cases at St Elizabeth's Hospital G W Horsley Richmond—p 598
- Von Gierke's Disease Note New Disease of Children E G Scott Lynchburg—p 601

Western J Surg, Obst & Gynecology, Portland, Ore

44 166 (Jan.) 1936

- *Correlation Between Shape of Female Pelvis and Clinical Course of Labor A V Pettit L H Garland R D Dunn and P Shumaker San Francisco—p 1
- \ Ray Examination of the Obstetric Patient C R Johnson Los Angeles—p 21
- *Is the So Called Safe Period Trustworthy? L A Emge San Francisco—p 28

Labor and Shape of the Female Pelvis—Pettit and his collaborators found that in their 100 unselected primigravidas the relative incidence of the various types of pelvis as determined roentgenographically compares fairly closely with that of Caldwell and Moloy in their studies of skeletal material. The incidence of these types was found to be gynecoid group, 51 per cent, android group, 21 per cent anthropoid group, 18 per cent, platypelloid group, 5 per cent asymmetrical pelvis, 5 per cent. In the 100 pelvis approximately 65 per cent constituted "pure" types and 35 per cent "mixed" types. The obstetric significance of the various types of pelvis appears to be as follows: 1 The necessity for operative intervention in the gynecoid types is low. 2 The necessity for intervention in the android, anthropoid and platypelloid groups is increased especially in the "pure" types of these pelvis, being as high as 40 per cent in the android types. 3 A narrow subpubic angle is the most unfavorable single anatomic feature in producing difficult labors. It is not sufficient to classify pelvis on shape alone, the type of the pelvis, the size of the inlet and the shape of the subpubic angle should be considered.

The Safe Period—Emge believes that fertilization must follow in close sequence to cohabitation, assuming that only one egg is produced in each human cycle. The proverbial unreliability of the so-called regular cycles of menstruation is still the greatest stumbling block in predicting periods of conception. More and more evidence is being introduced that unexpected irregularities in menstruation can occur at any time and in any cycle. Hence, one must doubt the infallibility of the Ogino-Knaus theory, even if applied only in the strictest sense of limiting it to known cycles of minor variabilities. The formidable proof offered by Miller and by Latz puts considerable weight behind the claims made for the Ogino-Knaus theory. Nevertheless is it not a fact that there is no such thing as an infallible biologic law? Observations of others cannot be disregarded which place considerable doubt on the infallibility of determining the definite period of ovulation and conception. Every bit of evidence should be considered in this controversy, and considerably more must be submitted before a verdict can be arrived at. The popularization of the thought that there exists a sterile period in women has been fostered through the issuance of books in which the subject unfortunately is smothered in a conglomerate of facts enthusiasm, sophistry and overemphasis of certain half truths. Not one of these books so far has added much to the solution of the question. The problem is still subject to debate and the public should be informed that the matter is not settled.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Experimental Pathology, London

16 497 616 (Dec.) 1935

- Effects of Extracts of Pancreas on Different Viruses Antoinette Pine—p 497
- Schick Tests in Iceland N Dungal and J Sigurjonsson—p 503
- Improved Dropping Apparatus for Preparing Antigen Suspensions for the Sigma Test W Ralston—p 505
- Cultivation of Virus of Influenza W Smith—p 508
- Hemolytic Streptococci Fibrinolysis C H Stuart Harris—p 513
- Toxicity and Antigenic Properties of Different Fractions of Bacillus Dysenteriae (Shiga) L Olitzki and J Leibowitz—p 523
- Stability of Gravis Mitus and Intermediate Types of Corynebacterium Diphtheriae J F Murray—p 532
- In Vitro Investigation of Reaction Between Diphtheria Toxin and Antitoxin Margaret Healey and S Pinfield—p 535
- Optimal Precipitin Reactions Annie M Brown—p 554
- *Influenza Observations on Recovery of Virus from Man and on Antibody Content of Human Serums C H Andrewes P P Laidlaw and W Smith—p 566
- Graded Collodion Membranes for Bacteriologic Studies Practical Aspects of Mechanism Determining Character of Membrane and Roles of Particular Solvent Constituents W J Elford P Grabar and J D Ferry—p 583
- Further Studies on Differentiation of Virus of Vesicular Stomatitis from That of Foot and Mouth Disease with Particular Reference to Rapid and Certain Method of Resolving Mixtures of Two Viruses I A Galloway and W J Elford—p 588

Recovery of Influenza Virus—Andrewes and his collaborators recovered a virus pathogenic for ferrets from four teen cases of influenza, five in 1933, one in 1934 and eight in 1935. Their successes occurred at times of prevalence of a form of infection of the upper respiratory tract of high infectivity. No virus was recovered from sporadic cases diagnosed as influenza. These observations support the view that what is commonly regarded as influenza is not an entity. It becomes, therefore, a matter of prime importance to find, if possible, some means of differentiating clinically between the disease caused by a ferret-pathogenic virus, which they identify as epidemic influenza, and other conditions resembling it. It is, of course possible that some of the sporadic cases are due to an influenza virus in which lessened infectivity for man is associated with failure to adapt itself to the ferret. The finding of antibodies active against the human strain of virus in most adult serums is of great interest and needs further study in relation to immunity or susceptibility to infection. At present it is not known whether people having antibodies in their serums are immune to an attack of the disease or not. Francis and Magill found no antibodies to the virus in persons in the acute stage of influenza, but these developed during convalescence. In ferrets the immunity wanes during the six months following infection, and the animals regain some susceptibility at a time when antibodies are still demonstrable in their serums. The antibodies to swine influenza in adult human serums may possibly be nonspecific in the sense that they represent past contact not with that virus but with some unknown related antigen. But if they are regarded as possibly specific, an interesting field for speculation and research is opened up. Neutralizing antibodies to human (WS) influenza virus were found in the majority of human serums examined. Their incidence was rather lower in children less than 10 years of age than in older children and adults. Neutralizing antibodies to swine influenza virus were regularly present in adult serums but were wholly absent from the serums of fourteen children less than 10 years of age. Influenza virus passaged through ferrets failed to infect two human volunteers by the intranasal route. Both these volunteers had neutralizing antibodies in their serums before the test was made.

British Journal of Physical Medicine, London

10 143 164 (Jan.) 1936

- Physiotherapy of Winter Skin Troubles W J O Donovan—p 144
- Certain Rheumatic Affections in Winter Some Notes on Prevention and Treatment J A Cruickshank—p 146
- Winter Affections of Nose Throat and Ears Physical Methods in Prevention and Treatment C H Thomas—p 148
- The Quartz Mercury Arc History and Development B D H Watters—p 150
- Short Wave Therapy Some Points in Technique M Berry—p 157
- Chromotherapy Technique and Practice R D Howat—p 154

British Medical Journal, London

2 1191 1240 (Dec 21) 1935

- *Leukemic Infiltrations J B Cleland—p 1191
- Staphylococcus Infections of Skin and Their Treatment J I Connor—p 1195
- \ Ray, Diagnosis of Acute Intestinal Obstruction D H Patej and P B Ascroft—p 1197
- Significance of Leukorrhea A Sharman—p 1199
- Massive Collapse of Lung Complicating Hemoptysis J Mindline—p 1201
- Antenatal Diagnosis of Quadruplets E U Williams—p 1206
- Quadruplets Case M C E Constantine—p 1206
- The Eynesbury Quadruplets E H Harrison—p 1207

Leukemic Infiltrations—Cleland gives examples of (1) leukemic infiltration of heart muscle, in one case causing sudden death in a seemingly healthy man, (2) leukemic infiltration of the kidneys or pancreas to a degree calculated to embarrass the functions of such organs, (3) leukemic cerebral accidents in which white cells form conspicuous accumulations, mostly from the associated hemorrhage, and (4) neoplastic-like deposits of seemingly leukemic cells in various organs and tissues in known or presumed leukemic cases and in cases that have not shown any alteration in the blood picture (pseudoleukemia). Examples are given of infiltrations in lymphosarcomatosis. The author finds it difficult to decide in some cases whether the condition is a lymphosarcoma or a pseudoleukemia. He is not satisfied that there is a sharp line of demarcation between these. Examples are also given of infiltrations in acute cases of Hodgkin's disease and Hodgkin's sarcoma of Ewing. The presence, even in small numbers, of reticulum cells with compound or multiple nuclei is a help in diagnosis and enables some cases resembling lymphosarcoma to be reasonably transferred to this group.

East African Medical Journal, Nairobi

12 261 296 (Dec) 1935

- Outline of Work on Glossina Palpalis in Kenya C B Symes—p 263
- Loose Stools with Particular Reference to Amebiasis Part II H C Trowell—p 282

Glasgow Medical Journal

6 265 324 (Dec) 1935

- Recent Views on Female Sex Hormones D Baird—p 265

Indian Medical Gazette, Calcutta

70 661 720 (Dec) 1935

- Some of the Major Complications in Treatment of Syphilis R V Rajam—p 661
- *Treatment of Lobar Pneumonia with Intravenous Injections of Alcohol I Bakhsh and A T Andreassen—p 673
- Atabrine Treatment in Malaria D C Hay A E Spaar and H L Ludovici—p 678
- Mental Derangement in Malaria Cases Treated by Atabrine Musonate Injections L Udalgama—p 679
- Gtherington Wilson Technic of Intrathecal Nerve Root Block A T Andreassen—p 683

Treatment of Pneumonia with Injections of Alcohol—Bakhsh and Andreassen employed a solution of 20 per cent alcohol in physiologic solution of sodium chloride in the treatment of six cases of uncomplicated lobar pneumonia. The dose, injected intravenously, varied from 20 to 25 cc daily. They found later that the strength of the solution could be increased to 33 per cent without causing any more reaction than previously. In one case they had to give two injections of 12 and 10 cc daily, owing to constant rigors which single doses of 20 cc produced. In all the other cases the reaction to the injection was slight and limited to a feeling of chilliness from about twenty to forty-five minutes after the injection. Subcutaneous infiltration due to faulty technic in puncturing the vein produced momentary pain running up the arm. Slight induration without suppuration at the site of injection was the only sequel observed when the needle either slipped out of the vein or transfixed it. Within an hour of the injection there was sufficient decrease in the intensity of the pain in the chest to allow the patient to sleep comfortably. It had completely disappeared within forty-eight to seventy-two hours after the first injection. After slight stimulation during the injection in some cases there was steady decrease in the coughing. Cyanosis remained entirely insignificant throughout the course of the disease in cases in which the injections were commenced from the first or second day of disease. In the majority of

cases the respiration rate was lowered and the dyspnea much reduced. The pulse rate was slightly lowered. There was some rise of temperature after each injection, the rise decreasing gradually as the patient's condition improved. The temperature remained raised until the crisis occurred at the eighth or ninth day, just as in an untreated case of pneumonia. Arrest of the process of consolidation in cases treated from the start of the disease was remarkable. The congestive stage gradually regressed so that by the time the crisis occurred the involved lobe was almost free from any signs of pneumonia. In two cases in which alcohol was not commenced until the fifth day of the disease and consolidation had already set in, resolution was rapid. Except in one case in which the leukocyte count rose from 8,500 to 12,800 after the first injection, there was a gradual decrease running parallel with the regression of the lung signs and the improvement in the general condition of the patient. The course of the disease, from the rise of temperature on the first day to the fall on the eighth or ninth day by crisis was the same in cases treated with alcohol in those partially treated with alcohol and in those not treated by alcohol. The complications, i. e., lung abscess and acute nephritis, were beneficially affected by the alcohol. The subjective condition of the patient was immediately changed from that of the acute distress of the pneumonic patient to one of ease and sleep. The foregoing treatment is now being applied by one of the authors to postanesthetic and postoperative lung complications.

Journal of Laryngology and Otology, London

50 897 976 (Dec) 1935

- Obstructions of the Trachea L Colledge—p 897
- Id F C Ormerod—p 903

Journal of Neurology and Psychopathology, London

16 97 192 (Oct) 1935

- Neurologic Complications of the Third Molar Tooth C B Henry—p 97
- Crystal Formations in Spinal Fluid and Their Diagnostic Significance K Zeiner Henriksen—p 111
- Meningeal Lipomas in Foramen Magnum W Misch—p 123
- Recurrent Attacks of Prolonged Sleep Case M S Jones—p 130

Journal of State Medicine, London

43 683 744 (Dec) 1935

- The Harben Lectures 1935 Problems of Nutrition and Growth P Armand Delille—p 683
- *Injection of Histamine in Rheumatism C G Eastwood—p 720
- Histamine Ionization Therapy Dorothy Potter—p 729
- Some Aspects of the Carrier Problem D H Haler—p 738

Injection of Histamine in Rheumatism—Eastwood states that beneficial effects were obtained with histamine in instances of almost all types of rheumatism, though not in every individual case. Patients having periarticular arthritis of the small joints of the hand, impairment of the grip and cold and cyanotic fingers gave the best response. The worst type of response to the drug was in cases in which no circulatory disturbance was demonstrable. The most immediate and constant effect was flushing. A second effect of histamine was the relief of pain with an increased range of movement of the joints. Both of these generally occurred within two or three minutes of the injection although occasionally there was a latent period of some hours. Histamine relieved vasomotor symptoms. The patients experienced a sensation of general bodily warmth even when erythema of the skin was not observed. This feeling of heat lasted some hours and then tended to subside a lesser degree remaining for several days. While the face was flushed fullness and throbbing of the head were common sometimes actual headache and sometimes dizziness. These effects lasted from a few minutes up to half an hour. It was found that headache might almost always be avoided if the patient lay down for half an hour following the injection. With histamine there was usually a fall in blood pressure of from 20 to 40 mm of mercury, returning to normal within five minutes. If the blood pressure was initially high the fall tended to be somewhat greater. With thiohistamine the blood pressure was but rarely affected and then only by the larger doses. The foregoing effects were constant and usual, but sweating, drowsiness, appetite, well being, temperature, pulse, respiration and paresthesia were less constant.

and occurred in a few cases and therefore the author discusses them briefly. Whether the effects of histamine treatment are lasting and whether it can replace other forms of treatment have yet to be shown.

Lancet, London

2 1335 1392 (Dec 14) 1935

- *Use of Gonadotropic Hormones in Treatment of Imperfectly Migrated Testes A W Spence and E F Scowen—p 1335
- Bovine Phthisis Its Incidence in Northeast Scotland County Cases A S Griffith and J Smith—p 1339
- Aminopyrine Hypersensitivity and Agranulocytosis A B Hansen and C Holten—p 1342
- Treatment of Acute Frontal Sinusitis T B Layton—p 1345
- Undescended Ovaries R M Walker—p 1346

Use of Gonadotropic Substance in Undescended Testes—Spence and Scowen treated thirty-three patients aged 4 to 26 years having imperfectly migrated testes with the gonadotropic substance from pregnancy urine given in doses of 500 rat units intramuscularly twice a week. Both testes descended into the scrotum in six of the bilateral cases and one testis in four, while in two cases descent has not occurred. In eleven of the nineteen unilateral cases the testis descended and in two cases with the testis high in the neck of the scrotum a low position in the scrotum was assumed. Successful results were obtained within periods ranging from two weeks to fourteen and one-half months. The testes have remained in the scrotum in nine of eleven cases followed for from one to eleven months after cessation of treatment.

Medical Journal of Australia, Sydney

2 675 706 (Nov 16) 1935

- Glance at the History of Therapeutics R D Rudolph—p 675
- Historical Survey of the Progress of Medicine in Relation to Cardiovascular Disease E F Cartrell—p 681
- *Propagation of Virus of Epidemic Influenza on Developing Egg T M Burnet—p 687

2 707 738 (Nov 23) 1935

- Medical Research in Australia W J Penfold—p 707
- Intrabiliary Rupture of Hydatid Cysts of Liver Report of Five Cases A L Carrodus—p 714

2 739 768 (Nov 30) 1935

- Otologic Manifestations of Neurologic Disease D G Cartwright—p 739
- Primitive Medicine Men A P Elkin—p 750
- The Suva Native Medical School J Barrett—p 757

Propagation of Virus of Epidemic Influenza on Developing Egg—Burnet propagated the virus of epidemic influenza for fourteen generations on the chorio-allantoic membrane of the developing egg. It was initiated by inoculating eggs with a membrane filtrate made from nasal mucosa and lung of ferret 10 which was killed during the secondary temperature rise of a typical attack of ferret influenza. For passage membranes were removed from the egg to sterile solution of sodium chloride in a petri dish and examined for lesions with a lens against a dark background. Membranes with distinct lesions were then placed in broth tubes and left in the refrigerator till convenient. To prepare the inoculum the membrane was ground with quartz powder and 4 or 5 cc of broth. This was centrifuged at fairly high speed in an angle centrifuge for from five to ten minutes and the supernatant fluid inoculated. Characteristic lesions were produced the macroscopic and microscopic features of which are described. It is highly probable that in the near future attempts at immunization of human beings with killed or attenuated influenza virus will be made, and that the egg membrane technic may find an important practical application. It allows growth of influenza virus which is certainly free from contaminating viruses or bacteria and should almost certainly provide a much more suitable 'raw material' for the preparation of antigens than either ferret or mouse tissues.

Chinese Medical Journal, Peiping

49 1075 1182 (Oct) 1935

- Impho Epithelioma of Nasopharynx with Involvement of Nervous System Y L Cheng—p 1075
- Injured Back of the Working Man J B G Muir—p 1092
- Value of H and O Agglutination in Serologic Diagnosis of Typhoid Fever R C Robertson and H Yu—p 1117

Journal de Médecine de Lyon

16 749 782 (Dec 5) 1935

- Appendicitis Grave or Complicated by Acute Peritonitis Preventive or Curative Treatment with Anticollibacillary Serum as Adjuvant of Intervention H Vincent—p 749
- Large Heart with Ventricular Polysystole Acute Form P Veil—p 759
- Lost Drainage in Abdominal Surgery F Delvaux—p 769

Presse Médicale, Paris

43 2001 2024 (Dec 11) 1935

- *Gastric Crisis of Tabes L Binet and J Parrot—p 2001
- Medical Drilling of Hip T Coste and J Fauvet—p 2002
- Fermented Pap of Whole Flour Leon Meunier—p 2004

Gastric Crisis of Tabes—Binet and Parrot studied the chloride metabolism in a patient having constant vomiting from a tabetic gastric crisis. They observed the chloride loss the level of blood chloride and the variations in blood urea. From these observations they concluded that the gastric crisis of tabes causes a condition of lowered blood chloride which perhaps explains the extreme depression of these patients. The crisis develops in three phases: nervous phase or dechloridation, humoral phase or stabilization of low chloride level, and critical phase or repair. It is not sufficient to treat the nervous factor by intravenous injections of atropine, rechloridation also is indicated. If begun on the first day, it should be sufficient to compensate for the chloride loss.

Schweizerische medizinische Wochenschrift, Basel

66 25 60 (Jan 11) 1936 Partial Index

- Röntgen Diagnosis in Obstetrics E Anderes—p 26
- Experiences with Nitrous Oxide Ether Anesthetics C Brunner—p 72
- *Colposcopy as Method of Choice for Early Diagnosis of Carcinoma of Uterine Cervix A Bucher—p 30
- Technic of Irradiation of Vaginal Cancer E Held—p 37
- Venopathia Silitans (So Called Thrombophlebitis Migrans) as Sequel of Chronic Empyema of Gallbladder C Henschen—p 38
- *Incidence of Puerperal Infections After Bath and Coitus During Last Two Weeks Before Delivery T Koller—p 48

Colposcopy for Early Diagnosis of Cervical Carcinoma—Bucher points out that the appearance of a vaginal discharge that has a reddish tint, the intermediate hemorrhages or hemorrhages occurring after examination, after coitus or after forced defecation are late symptoms, they indicate the terminal stage. Pain also is a late symptom, for by the time pain is felt the carcinoma has already spread to the pelvic connective tissue, the peritoneum, the sheath of the psoas and the ischiadic plexus. Carcinoma of the uterine cervix does not produce subjective symptoms during the early stage. He thinks that the early diagnosis of carcinoma of the uterine cervix is possible only if every woman beyond the age of 30 is subjected once a year to a thorough examination. The usual methods of examination are bimanual palpation and examination with the speculum. Palpation is the more valuable of these two methods, because the wall of infiltration surrounding the carcinoma can be better felt than seen. If it cannot be decided whether an area is carcinomatous or not an exploratory excision is advisable but is justified only if there is reason to suspect the presence of carcinoma. The author admits that for the practitioner it is extremely difficult to recognize the nature of changes in the uterine cervix merely by means of palpation and by inspection with the eye. A reliable serologic diagnosis would be of great help but although there are some promising methods none have as yet produced satisfactory practical results. For this reason hope lies chiefly in the improvement of the local methods of examination and in this connection the author mentions Schiller's iodine test and colposcopy which should be used together. Colposcopy is the stereoscopic observation of the cervix with centered illumination and considerable magnification. Colposcopy reveals that the cervical carcinoma does not necessarily appear in the form of nodules but rather in the form of peculiar epithelial changes. Hinselmann designates these stages as matrix regions. They appear as leukoplakia as well as under other forms. Later examination often reveals leukoplakia where previously other changes had existed. Histologic studies indicate the uniformity of the various changes, in that they reveal atypical epithelium with a tendency to cornification and to growth into the connective tissue and into the glands.

Approximately 20 per cent of the so-called matrix regions prove to be carcinomas. They are the symptomless incipient stages and their recognition by colposcopy demonstrates the great value of this diagnostic method. The matrix regions are removed by shallow amputation of the cervix. Thus cure is effected without great surgical risk and without danger of relapse. Moreover the uterus retains its functional capacity (menstruation and eventually pregnancy).

Puerperal Infections After Bath Before Delivery—To determine whether a tub bath or coitus during the last two weeks before delivery will increase the incidence of febrile temperatures and of inflammatory complications during the puerperal period, Koller studied 2,750 spontaneous deliveries and 922 cases in which the delivery had to be terminated by a vaginal or abdominal operation. In the women who had had a tub bath conditions were less favorable only in those who had to undergo a cesarean operation. However, the differences were not entirely outside the margin of error. In the group of women who had had coitus the febrile temperatures were more frequent among the spontaneous deliveries as well as among the surgical deliveries, however, the inflammatory complications did not show a higher incidence. The author concludes from his observations that a tub bath or coitus during the last two weeks before delivery do not justify an unfavorable prognosis for the puerperium. He hopes that this problem will be investigated further.

66 6184 (Jan 18) 1936 Partial Index

Necessity of Critical Investigation of Anamnesis in Case of Expert Testimony in Matters of Compensation R Bing—p 61

*Treatment of Delirium Tremens H Steck—p 68

Theoretical Considerations Regarding Jejunal Ulcer After Gastro-Enterostomy P Decker—p 73

*Type Diagnosis of Paratyphoid B Group C Hallauer—p 77

Treatment of Delirium Tremens—According to Steck, the treatment of uncomplicated delirium tremens is done best without the use of narcotics and without alcohol. He shows that the mortality rate is high in institutes in which alcohol is given to patients with delirium tremens, whereas it is low in institutes in which no alcohol is given. With regard to the use of narcotics, he says that patients with delirium tremens are generally refractory to moderate doses and that the doses which would be effective involve the danger of impairment of the centers of the medulla oblongata. In this connection he mentions morphine and scopolamine the use of which has been discontinued because it involves danger. However, chloral hydrate and paraldehyde are still being used. The author considers inadvisable confinement in the cell as well as the use of straps and strait-jackets, but he has found the use of a bed with a grating quite helpful. The grating should be constructed of ropes rather than of metal. If this type of bed is used the patient can move freely in his bed and is not likely to injure himself. The author points out that if the use of this type of bed does not seem desirable, paraldehyde may eventually be tried. However, in cases in which careful watching is possible, he considers an insulin carbohydrate treatment advisable. Insulin has been used in the treatment of delirium tremens because of its action on the hepatic disturbance that exists in these patients but the author noted that it also has a general sedative effect. To be sure a hypoglycemic shock must be carefully avoided because patients with delirium are predisposed to epileptic attacks. The patient should be given in the morning from 5 to 10 units of insulin after an hour this dose should be repeated and after another hour 60 Gm of sugar should be given diluted in water or coffee. If necessary the sugar may be given after the first dose of insulin. The author attaches especial importance to the dietetic treatment. If the treatment is carried on without the use of narcotics large quantities of fluids should be given such as coffee with milk tea and fruit juices. The food should provide large amounts of carbohydrates but should be deficient in fats and proteins. The circulation and the cardiac action must be supported by the administration of heart stimulants. In cases in which the renal function fails resection with subsequent infusion of sodium chloride solution may eventually be helpful or salyrgan may be tried cautiously.

Type Diagnosis of Paratyphoid B Group—Hallauer shows that the type differentiation is important as it gives information about the course the infection will take. An infection caused by the Schottmüller type usually takes the course of an abdominal paratyphoid. The incubation period lasts from three to six days and the characteristic symptoms are splenic tumor, roseola, leukopenia and slow pulse. It persists for about twenty-one days and carriers are quite frequent in this type. The paratyphoid of Breslau type, however, is usually characterized by an acute gastro-enteritis, it lasts only a few days and carriers are rare. The Schottmüller type of infection is usually transmitted by direct contact, and thus sporadic cases are more frequent than group infections, whereas in the case of infections with the Breslau type mass infections predominate. The author made bacteriologic studies in two minor epidemics of paratyphoid. The first epidemic could be traced to a paratyphoid carrier in a dairy. In the course of two months the author observed twenty-six cases. The incubation period averaged six days and the symptoms were usually like those of typhoid and persisted for about eighteen days. The feces contained paratyphoid B bacilli as a rule up to the third week, but in two cases they were still present after seven and eight weeks. All strains obtained in pure culture were of the Schottmüller type. The second paratyphoid epidemic occurred in an institution and could be traced to infected milk. The cases occurred almost simultaneously and all presented the aspects of an acute gastro-enteritis lasting only a few days. The author examined five specimens of feces, in two he detected B enteritidis Breslau and in the others he found paracolon bacilli. After a strain had been found to belong to the paratyphoid B group it was subjected to type differentiation. The cultural method of type differentiation was done by testing the strain with d-tartaric acid and with rhamnose and by watching for the formation of mucous walls on the agar plates. The Schottmüller type was found to react negatively to tartaric acid and to rhamnose and was found to form a wall of mucus, whereas the bacilli of the Breslau type showed the opposite behavior in all three tests. The serologic type differentiation was done first on the slide and eventually also by detailed agglutination tests with type specific serums.

Pediatrics, Naples

44 196 (Jan 1) 1936 Partial Index

Taxism in Hemophilic Child Case G Macciotta—p 1

Behavior of Diastase in Cerebrospinal Fluid of Epileptic Children G Bettinardi and A Macchi—p 7

*Globular Resistance in Tuberculosis in Children M Andreucci—p 18

Biologic Activity of Leukocytes M Laureati—p 31

Primary Diphtheria of Vulva Cases A Maccari—p 59

Resistance of Erythrocytes in Tuberculosis in Children—Andreucci made determinations of the resistance of the erythrocytes in the blood of thirty-two children of both sexes, ranging from 3 to 12 years of age and suffering from tuberculosis in different stages of evolution and in any one of the following localizations: lungs, bones, lymph nodes or peritoneum. For evaluation of his results he used Viola's formula for the maximal mean and minimal globular resistance of the erythrocytes (R1, R2 and R3 respectively). The maximal resistance of the erythrocytes (R1) was greatly increased in all the cases of the author. The mean resistance (R2), regardless of the localization of tuberculosis, was increased in the most serious cases of the disease and normal or diminished in the few cases of patients who were recovering. The minimal resistance (R3) was normal in all cases. The author states that his results point out that the reticulo-endothelial system is insufficient in tuberculosis. Its insufficiency is manifested by the defective hemocatheretic action of the system on the erythrocytes especially on those already mature but recently entered into the circulation and which constitute the group of the first resistance. In grave cases of tuberculosis the insufficiency acts also on the erythrocytes that constitute the group of the second resistance that is those which have been forming the mass of the blood longer than those of the former group. However in grave cases of tuberculosis in patients of general good condition and with a tendency to improve, the insufficiency of the reticulo-endothelial system does not manifest itself, owing to the fact that in these cases the system

has regained its normal activity. These facts explain the constant increase of the first globular resistance in all the cases of this group, that of the second resistance in the most serious cases and the normal values of the second resistance in cases tending to improve, and that of the third resistance in all cases.

Policlinico, Rome

43 152 (Jan 1) 1936 Medical Section

*Embolotherapy in Pulmonary Tuberculosis G Triolo—p 1

*Value of Methods for Investigation of Functions of Pancreas and Exocrine Functions of Pancreas in Diabetes Mellitus G Barbera and G Adinolfi—p 27

Bilateral Collapsotherapy Cases L Barchi and G Leoncini—p 42

Functions of Pancreas in Diabetes Mellitus—Barbera and Adinolfi determined the diastases and lipases in forty-nine patients suffering from different diseases. Twenty-one patients of the group had diabetes of either a mild or a grave form. The authors used Wohlgemuth and Rona-Mellis tests for determining the diastases in the blood and in the urine and the lipases in the blood, respectively. The results of the tests, which were verified by studies made on the duodenal secretion as well as by the observations made during operation in three cases and at necropsy in two cases, confirm their dependability. In relation to the results obtained in the group of diabetic patients the authors conclude that the content of diastases in the blood and in the urine is diminished and that of lipases in the blood increased in all cases of grave pancreatic diabetes. The results of the authors' work, as well as those reported by the use of Wohlgemuth and Rona-Mellis tests, indicate that in cases of pancreatic diabetes there is neither independence nor antagonism between the functions of the internal and external secretions of the pancreas but that grave lesions of the acinar portion of the gland coexist with those of the insular portion of the organ. The authors obtained satisfactory results by the administration of raw pancreas or of a preparation of dry pancreas. The treatment results in increasing the diastase content of the blood and the urine and diminishing the lipase content of the blood of the patients.

Prensa Medica Argentina, Buenos Aires

23 85 154 (Jan 8) 1936

*Determinations of Direct and Indirect Serum Bilirubin in Jaundice. Their Importance for Hepatobiliary Surgery A J Bengolea C Velasco Suarez and A E Raices—p 85

Test of Fine Stroke and Drop in Detection of Gold by New Reagent L Rossi—p 102

Tonus of Heart Its Importance in Relation to Pathogenic Treatment of Cardiac Diseases by Digitalis Atropine Quinidine C de Tommaso—p 104

Pathogenesis of Intestinal Localization of Typhoid L Chirsky—p 119
Application of Theory of Conditioned Reflexes to Human Pathology Paulina H de Rabinovich—p 127

Banti's Syndrome Case I L Resio—p 134

Bilirubin in Blood Serum in Diseases of Biliary Tract—Bengolea and his collaborators made determinations of the direct (biliary) and indirect (blood) bilirubin in the blood serum of seventy-five persons, including normal persons and patients suffering from jaundice or other pathologic conditions unrelated to the biliary tract. The author concludes that direct bilirubin does not exist in the blood serum of persons having a normal liver. Its presence in the blood indicates lesions of the trabeculae of the liver with formation of fissures through which direct bilirubin passes from the bile capillary to the blood capillary side. Fiessinger's schemes for interpretation of the mechanism of entrance of direct bilirubin into the blood in relation to the extension of the trabecular injury in the several types of jaundice are exact but they should be modified in accordance with the fact of the existence of two types of bilirubin for a better interpretation of their significance. The presence of an increased amount of indirect bilirubin in the blood serum of icteric patients is an important index of extensive injury to the liver associated with functional insufficiency of the organ, provided the presence of hemolytic jaundice can be excluded. This statement was proved in the authors' cases by the fact that while the figures of indirect bilirubin in the blood serum of icteric patients who were suffering from liver insufficiency were high, those in icteric patients who did not develop hepatic insufficiency were either normal or slightly increased.

Archiv fur Dermatologie und Syphilis, Berlin

173 317 434 (Jan 4) 1936 Partial Index

Experimental Tuberculosis of Skin in Cats K H Osterhage—p 317

Histology of Fox Fordyce Disease F Poor—p 336

*Sensitization of Skin Against Autoserum and Antiblood E Bizzozero—p 342

Problem of Direct and Indirect Action in Chemotherapy K A Golowizina—p 347

Differential Diagnosis of Acrosclerosis and of Raynaud's Disease J Sella—p 352

Sensitization of Skin to Autoserum—Bizzozero describes studies on twenty-five patients to whom he administered intracutaneous injections of 0.2 or 0.5 cc of their own serum. Often he made the injections several times at the same site, usually the external surface of the arm. In thirteen cases the reaction was negative, that is, no changes of any kind were observable after several injections and in three cases a slight temporary infiltration resulted, but in spite of this the author counts these three with the negative cases. In nine cases the reaction was positive. In these cases the first intracutaneous injection of autoserum as a rule caused no changes or only a mild infiltrate which disappeared again in from twenty-four to forty-eight hours. Repeated injections at the same site, however, resulted in a slightly elevated, rather firm nodule, which persisted unchanged for from twenty to forty-five days and then subsided gradually. Moreover, if now the same quantity of serum was injected near the first nodule, there often developed within a few days a slightly erythematous nodule, which as a rule was somewhat less elevated and infiltrated than the first one. When these nodules were rubbed lightly, they swelled up and resembled pigmented urticaria. In three patients, in whom the nodules were especially prominent, he noted that, whereas previous to the autoserum injections the intracutaneous injection of auto blood caused not the slightest reaction, the same injection, when made in the surroundings of the nodules, caused a large wheal which in the course of the following days developed into a deeply infiltrated, erythematous nodule. In one of the three patients the nodule appeared without the preliminary wheal formation. Injections with Locke-Ringer's solution, which served as control tests, gave negative results. The author made histologic studies on two nodules that had developed after the injection of autoserum. He observed a tubercloid structure. He reaches the conclusion that substances are formed within the serum, either after it has been withdrawn from the organism or after it has been reinjected, which sensitize the skin of the patient against his own serum or against his own blood. The reaction can probably be traced to an antigen antibody reaction.

Archiv fur Gynakologie, Berlin

160 223 446 (Dec 19) 1935 Partial Index

Clinical Aspects of Cesarean Operation E Puppel—p 223

*Chorionepithelioma and Its Hormonology A Mandelstamm—p 239
Biologic Action of Dihydro Estrin Benzoate C Claiberg and W Breipohl—p 263

Wedge of Theca Interna a Typical Formation of Growing Mammalian Follicles Erika von Moellendorff—p 278

*Influence of Amniotic Fluid on Contractile Action of Uterus P I Tomma—p 333

*Question of Specificity of Ovarian Tumors Causing Masculation W Schiller—p 344

*Placental Theory of Pathogenesis of Pregnancy Toxicoses, Particularly of Eclampsia Ulesko Stroganova—p 431

Chorionepithelioma and Its Hormonology—Mandelstamm describes four cases of chorionepithelioma, the first of which was detected in time by the Aschheim-Zondek reaction and showed peculiar hormone conditions during the postoperative period. The third patient died and the others recovered. The latter were kept under observation for several years, the urine being subjected to the test from time to time. The author reviews a case that was recently described by Siegmund and as far as the postoperative hormone reactions were concerned resembled the first of the cases described by him. He points out that Siegmund gained the impression that the appearance of positive urine reactions following the removal of a cystic mole was caused by a storage of the hormones in lutein cysts and the author thinks that in his (first) case the positive urine reaction may likewise have been caused by a lutein cyst. He stresses that his own case and that described by Siegmund demonstrate how carefully the recurrence of positive urinary reactions must

be evaluated before they are considered an indication for irradiation or for surgical treatment. He does not consider a single positive reaction an adequate reason for a radical intervention and thinks that the extirpation of the ovaries in Siegmund's case was not justified after the character of the tumors had been recognized during the operation.

Influence of Amniotic Fluid on Contraction of Uterus

—Fomina reviews the literature on the genesis, composition and hormone content of the amniotic fluid and then reports his investigations on the influence of the amniotic fluid on the contractile action of the uterine musculature. He reaches the following conclusions: 1 The function of the amniotic epithelium and the excretory action of the fetal kidneys are the chief factors in the development of the amniotic fluid. 2 The amniotic fluid has a myotonic effect that increases as pregnancy progresses. 3 The amniotic fluid of a pregnancy that has been brought to term also exerts vasopressor actions. If the amniotic fluid is treated according to the method employed to extract the solution from the posterior lobe of the pituitary body, the dry residue that is obtained has myotonic as well as vasopressor characteristics and resembles extract of posterior pituitary. The author tested the extract from the amniotic fluid on the uterus of rabbits and of guinea-pigs and also investigated its influence on the blood pressure of rabbits and cats. He reaches the conclusion that the amniotic fluid as well as the extract obtained from it might eventually be used for the purpose of increasing the contractile action of the uterus.

Ovarian Tumors—Schiller points out that the question as to the manner of the transformation of the sex characters under the influence of masculating tumors can be answered only on the basis of the observations and opinions regarding the determination of sex. He points out that, whereas for a while it was believed that sex is determined by the hormones, it has been asserted also that the primary fixation of sex takes place on the zygotic, chromosomal basis. Cytologic studies on the sex cells indicated the possibility of a progamous and of a syngamous fixation of sexuality. To be sure, the complete post-embryonal development and maturation of the congenitally conditioned sex organs and sex characters is effected by the influence of hormones. The author points out that at present it is generally believed that although the hormones exert a protective influence on the sexuality the primary fixation of the specific sex characters nevertheless is lodged in the chromosomes. However, experiments have revealed that this so-called zygotic determination is by no means entirely fixed and unchangeable. In giving his attention to the masculation of women under the influence of some ovarian tumors the author considers it doubtful that the progamously or syngamously determined chromosomal constitution can be influenced later by internal or external factors. He considers it more likely that the hormones produced by the tumor stimulate and develop latent primordia. He stresses that a causal connection between tumor and masculation is definitely proved only if the symptoms of masculation disappear following the extirpation of the tumor. Considered from this point of view there are only three types of tumors that are connected with masculation: (1) ovarian tumors the structure of which resembles the male gonad, (2) lutein tumors and (3) adrenal tumors. The author discusses these tumors and their action.

Placental Theory of Eclampsia—Ulesko Stroganov describes experiments he conducted to determine the role of the placenta in the pathogenesis of eclampsia. He reached the conclusion that two factors must be considered in investigations on the pathogenesis of eclampsia: (1) the flooding of the maternal blood with decomposition products of the diseased placenta (in addition to the normal secretions and excretions of the placenta) and (2) the resistance of the maternal organism. The complex organic disorders that appear in toxemias of pregnancy are the result of the placental decomposition products that have entered the blood stream. Similar disturbances may develop in severe infections but in the ovaries only placental decomposition products and the hormones contained therein effect specific changes. The ovarian changes consist in the appearance of numerous corpora lutea, particularly those of the pseudo type, rapid growth and destruction of follicles, luxuriant growth of

the interstitial gland and severe hyperemia. Moreover, if the increased activity of the adrenals and of the thyroid is taken into consideration, it is evident that to the disturbances in the general condition there is added a disturbance in the correlation of the endocrine system. The author points out that recent studies have revealed an increased functional activity of the posterior lobe of the hypophysis in patients with eclampsia. He thinks that the organic changes which become manifest in edemas, extravasations of blood and necroses and which indicate a disturbance of the vascular system correspond with the observations described here.

Deutsche medizinische Wochenschrift, Leipzig

62 89 128 (Jan 17) 1936 Partial Index

- Diagnosis of Hereditary Deafness M Schwarz —p 89
- *Studies on Twenty-Four Hour Rhythm of Blood Sedimentation Under Normal and Pathologic Conditions A Jores and H Strutz —p 92
- Studies on Physiology of Gastric Mucus A Mahlo —p 96
- Therapy of Obesity A Strasser —p 97
- Problem of Pylitis of Pregnancy Stoeckel —p 99

Twenty-Four Hour Rhythm of Blood Sedimentation

—Jores and Strutz point out that, since the form elements of the blood as well as some of the constituents of the plasma are subject to rhythmic fluctuations, it was to be expected that the sedimentation speed of the erythrocytes likewise undergoes rhythmic changes in the twenty-four hour period. They made investigations on persons with normal sedimentation values as well as on some with abnormal values. In those with normal sedimentation it was found that if the withdrawal of the specimens is begun in the morning, the curve shows at first a decreasing tendency. Beginning with 10 a m the curve shows an upward trend which reaches its maximum at about 4 p m. Then there is a slight downward trend until 8 p m which in turn is followed by a slight and brief upward trend, to be followed again by a downward trend, which reaches its lowest point at about 6 a m. In the cases showing abnormal values of the sedimentation speed similar twenty-four hour curves were observed. The authors discuss the various factors that might play a part in the development of the rhythmic changes. They do not think that the food intake or physical exercise exerts an influence. Moreover they were unable to corroborate the observations of Imanow and Basilewitsch, according to which the gastric motility influences the sedimentation speed. In further studies they found that the examination of different patients on the same day resulted in similar curves, whereas the examination of the same patient on different days resulted in different curves. They reach the conclusion that in the practical employment of the sedimentation test, it is important to pay attention to the time of day at which the specimen is withdrawn, for a sedimentation value that is pathologic in the case of a morning specimen may still be normal if it concerns an evening specimen. Moreover, the authors observed two cases in which the sedimentation values were normal in the morning but pathologic in the evening. In both instances this proved to be of diagnostic significance. One patient had a lymphogranulomatosis, the other a postanginal sepsis. In the latter case the pathologic sedimentation values that appeared in the evening hours indicated a latent infectious process.

Deutsche Zeitschrift für Chirurgie, Berlin

246 129 248 (Jan 9) 1936 Partial Index

- *Independent Isolated Tuberculosis of Rib Cartilage W Muhlfelder —p 129
- Osteochondritis of Sesamoid Bone of First Metatarsal Bone A Sidler —p 143
- *Sarcoma of Female Breast and Neoplasms of Male Breast in Material of Leipzig Surgical Clinic J Rose —p 151
- Gynecologic Peritonitis Caused by Rupture of Pyosalpinx or Tubo Ovarian Abscess H Uebermuth —p 188
- Isolated Dislocation of Head of Fibula as Typical Sport Lesion F Strauss —p 212

Isolated Tuberculosis of Rib Cartilage—According to Muhlfelder conditions necessary for embolic infection of a rib cartilage are furnished by the central localization of its arteries and in particular of its terminal arteries. The infection extends by invading the neighboring cartilaginous tissue. The structural characteristics of the cartilage render it particularly vulnerable to the toxic effect of the invader. The serpiginous mode of

extension of the lesion is responsible for the frequent recurrence after operative removal. Radical operative removal is the only successful therapy of this condition. In cases in which there is fistula formation the latter may first be curetted and the patient allowed to become afebrile. Analysis of the cases treated at the surgical clinic of the University of Basel disclosed that the condition is found with greatest frequency in the middle aged and that the seventh, ninth and eleventh ribs are most frequently involved. The clinical course was exceptionally mild. There was almost no localized pain. Henschen's observations on the blood supply of a rib cartilage and on the formation of a medullary cavity were substantiated in the course of operations on these patients. Henschen's operative method consists of first aspirating the liquid contents with a syringe and then destroying the lesion with a diathermy point.

Sarcoma of Breast—Rose states that among 660 cases of malignant neoplasm of the female breast in which operation was performed at the surgical clinic of the University of Leipzig between 1913 and 1934 there were sixteen (2.1 per cent) cases of sarcoma. Of the latter the most frequent form histologically was the spindle cell sarcoma. It is relatively benign being characterized by slow growth and little tendency to metastasize. The round cell, the giant cell and the melanotic sarcomas occur far less frequently but run a rapid and malignant course. The average age incidence was 40 years. Lactation, menstruation, pregnancy and trauma were mentioned in four cases as contributing factors. The left breast was more frequently involved than the right. The sarcomatous breasts enlarged more rapidly than the carcinomatous breasts. Sarcoma does not exhibit a tendency to invade the pectoral muscles or the regional lymph nodes. They metastasize into the lungs or the liver by way of the circulation. The prognosis in sarcoma is more favorable than in carcinoma. There were 71 per cent permanent recoveries in their material among the former. Of a total of 745 observed cases of breast neoplasms eighteen were of the male breast (2.4 per cent). Twelve of these were carcinomas, two sarcomas and four adenofibromas. The most frequent form was the simple solid carcinoma while the adenocarcinoma and the medullary carcinoma were rare. The average age incidence was 59 years. Trauma was frequently mentioned in the histories. The right and left breasts were involved with the same frequency. The course of the growth is slow, the tumor seldom acquiring greater size than a plum or a small apple. The tumor is frequently attached to the skin and the pectoral muscles and presents an ulcerating surface. The regional lymph nodes have undergone malignant degeneration in 60 per cent of the cases. Body metastases were found in the vertebrae, ribs, pleura and lungs, liver and supraclavicular lymph nodes. Permanent cures were few. Only three patients survived the five year period. Sarcomas of the male breast are less frequent. When they occur as the spindle cell variety, they are characterized by slow growth and little tendency to metastasize. They were found to be free from metastases five years after the operation. The pericanalicular fibro-adenoma presents itself as a superficial, hard, freely movable tumor. It is benign and does not recur after extirpation. There were three cases of gynecomastia, one of which exhibited a definite heterosexual character dependent on the disturbance of the internal testicular secretion while in the other two the disturbance was apparently in the primordium.

Klinische Wochenschrift, Berlin

15 4172 (Jan 11) 1936 Partial Index

- New Studies on Gas Exchange During Bathing K. Kramer—p 41
- *Incidence in Human Subjects of Pulmonary Tuberculosis Caused by Bovine Type of Bacillus W. Goeters—p 45
- Action of Insulinization on Hypercholesterolemia of Diabetic Patients Who Are Sensitive to Insulin and Those Who Are Resistant to It E. Fenz—p 46
- Studies on Causes of Oxygen Deficiency in Tissues of Patients with Circulatory Disorders F. Meyer—p 48
- Röntgenologic Studies on Rachitic Twins W. Lehmann and I. Kuhlmann—p 50
- *Studies on Number of Leukocytes in Administration of Anorganic Arsenic K. Halter—p 52

Bovine Tubercle Bacilli and Human Tuberculosis—

Goeters described his studies on the strains of tubercle bacilli obtained at the pathologic institute in Leipzig from 135 cases of tuberculosis. In sixty-seven cases of chronic pulmonary

tuberculosis with extensive cavity formation he detected the bovine type four times. He also detected the bovine type in two out of fifty-one aged persons with tuberculosis. In eleven cases of new pulmonary tuberculosis with nontuberculous intercurrent diseases and in six cases of miliary tuberculosis of the lungs he always detected the human type of tubercle bacillus. Thus there were six strains of the bovine type in a total number of 135 strains that is 4.4 per cent. The author points out that this incidence corresponds with that reported by Griffith and Munro (4 per cent), but he admits that in a selected necrotic material of 183 cases Griffith observed bovine infections in 29.7 per cent of the cases. In discussing the cases with bovine infections in his own material, the author points out that two of his cases concerned children who had a caseous tuberculosis of the mesenteric lymph nodes and an extensive intestinal tuberculosis that is, the tuberculosis was probably an ingestive infection. In the two adults of the group with chronic pulmonary tuberculosis, droplet or dust infection in the course of contact with tuberculous cattle must have caused the infection with the bovine type. Neither of these two patients had intestinal ulcerations and it can hardly be doubted that the infection was air borne. But although the infection by cattle seems most likely in these two cases a transmission from man to man cannot be definitely excluded. Of the two aged persons in whom bovine bacilli were found, one had a mixed infection of the lungs (human and bovine types). However, simultaneously existing intestinal ulcerations contained only bovine bacilli. The author assumes that the bovine infection of the lungs was probably a metastatic process of the intestinal infection, for the tuberculous lesions in the intestine were older than those of the lungs. The other case of bovine tuberculosis in the group of aged persons concerned a rural laborer with a new aerogenic infection of the lungs without intestinal involvement.

Number of Leukocytes in Treatment with Arsenic—Halter studied the number of leukocytes in twenty six patients with psoriasis and in fifteen patients with various dermatoses, all of whom received injections of arsenic preparations. He observed a decrease in the leukocytes in thirteen of the patients with psoriasis and in eight of the fifteen patients with dermatoses while an increase in the leukocytes was noted in only one of the patients with psoriasis and in none of the patients with dermatoses. The author thinks that such an incidence of reductions in the number of leukocytes cannot be said to be within the scope of physiologic fluctuations. Moreover, he does not think that it can be ascribed to a subsidence in the inflammatory processes existing at the beginning of the treatment, because the leukocytes were found to increase again after cessation of the treatment without there being a recurrence of the inflammatory manifestations but rather a further improvement. The author stresses that the reduction of leukocytes was noticeable in only some of the cases in which other signs of arsenic intoxication (gastro intestinal disturbances, keratoses and so on) appeared, but it did appear in cases in which these other toxic symptoms were not evident, that is it may be the only indication of a toxic action of arsenic. He concludes that in patients who receive arsenic treatment the number of leukocytes should be regularly controlled.

15 73 112 (Jan 18) 1936 Partial Index

- Pigment Hormone and Antidiuretic Principle of Hypophysis G. Bottger—p 73
- Allergy and Water Economy B. Paul—p 76
- Immunization Against Diphtheria in Warsaw L. Hirsfeld and M. Zacki—p 79
- *Remarks on Method for Determination of Vitamin C in Urine R. Ammon and K. Hirsberg—p 85
- Exsorption of Spleen and Cutaneous Reaction in Experimental Syphilis of Rabbits A. Kropatsch and A. Fessler—p 88
- *Gustatory Disturbances in Influenza W. Schwanke—p 93

Determination of Vitamin C in Urine—Ammon and Hirsberg show that the various chemical methods for the determination of vitamin C in the urine are incorrect. The capacity of the urine to bind iodine is not suited for the quantitative determination of the vitamin C content, because ascorbic acid is not the only reducing substance in the urine. An addition of potassium iodide reduces the iodine number greatly but the true vitamin C content is not determined. The authors think that the indophenol method likewise produces excessive

values, but they believe that the methylene blue method according to Martini and Bonsignore discloses values that are nearer to the real ones. Attempts to develop other methods, in which the removal of the reducing substances and the coloration of the urine were the most important factors, have failed so far. The authors studied also the vitamin C content of the placenta. The iodine test as well as the indophenol method indicated relatively large quantities of cevitamic acid, and the methylene blue method revealed the presence of 1 mg per hundred grams. The authors reach the conclusion that all reduction methods are only makeshifts and must remain unsatisfactory, because there is always considerable uncertainty as to whether other substances are included in the determination. The problem of vitamin C metabolism can be solved definitely only by means of a reaction that is specific for the vitamin and permits a quantitative determination.

Gustatory Disturbances in Influenza—Schwanke reports that he observed four patients who developed disturbances in the sense of taste in the course of influenza. The patients complained that no matter whether they ate sweet, sour or other foods they always experienced a bitter taste. They found this extremely unpleasant. The olfactory sense was not impaired in these patients. The severity of the influenza had no effect on the appearance or on the duration of the gustatory disturbance. The author emphasizes that these gustatory disturbances are of an entirely different nature from those that develop in case of lingual diseases (glossitis, atrophic tongue and so on), for, while the latter are due to local disease of the tongue, those occurring in influenza must be due to a disease of the innervating nerves or of the gustatory center, because the tongue showed no pathologic changes and the excretion of bitter substances (as in the case of some intravenous injections) likewise could not be proved. The author points out that influenza is often accompanied by mild forms of neuritides and he thinks that the gustatory disturbances correspond to the paresthesias observed in neuritides. He admits that in one of his patients a circumscribed form of encephalitis existed. He concludes that gustatory disturbances may occur in all diseases that lead to neuritides or to disturbances of the central nervous system. Whether they are more frequent in influenza than in other disorders will require further investigations.

Wiener Archiv für innere Medizin, Vienna

28 1160 (Dec 20) 1935 Partial Index

- Method of Withdrawal of Gastric Juice at Short Intervals. Clinical Examination of Pancreatic Function. W. Berger, J. Hartmann and H. Leubner—p. 1
Roentgenologic Analysis of Constipation. R. Pape—p. 21
Depth Action and Dirigibility of Percussion Beats. A. Winkler—p. 41
Clinical Aspects of Extrasystolic Arrhythmia. C. Bloch—p. 55
Metabolic Hormone and Insulinogenic Substance of Anterior Lobe of Hypophysis. K. J. Anselmino and T. Hoffmann—p. 117
*Origin of Diastasia in Pneumonia. I. Pavel, I. Radvan and B. Volovici—p. 133

Origin of Diastasia in Pneumonia—Pavel and his associates studied the influence of the body temperature on the course of diastasia and diastemia in patients with pneumonia. They observed pathologic diastemia and diastasia but these disorders did not run parallel with the temperature. In the majority of cases they observed the pathologic diastasia in the terminal stage of the disease or in the period of crisis. They observed also that the diastase content of the blood and of the urine run parallel a factor that excludes the possibility of a renal involvement in diastasia. After ascertaining that the leukocyte ferments can be excluded as a causal factor of diastasia, the authors think that there remains no other explanatory factor than the development of a pancreatitis during pneumonia. Functional studies in the course of pneumonia and anatomic observations on the pancreas of one patient lead them to conclude that the pancreas is impaired in cases of pneumonia. On the basis of the fact that the pathologic diastase values appear simultaneously with the glycoregulatory disturbance, they believe that there is a connection between these two manifestations and think that the glycoregulatory disturbances might be explained as the result of pancreatic lesions without the involvement of other organs. In evaluating the practical importance of this problem they state that among the infectious processes that cause an exacerbation or diabetes

mellitus pneumonia plays the most important part and that in order to avoid this exacerbation it is necessary to increase the insulin dosage considerably. They point out that such cases have been designated as insulin resistant, but they are of the opinion that this condition can be explained differently. They think that the increased diastasia is the sign of an excessive permeability of the cells in the region of the pancreas. Moreover, they believe that the increased permeability applies not only to amylase but also to other ferments, particularly trypsin, and that a disturbance of the insulin by excessive amounts of trypsin is an important factor in the larger insulin requirements.

Wiener klinische Wochenschrift, Vienna

49 33 64 (Jan 10) 1936 Partial Index

- Epilepsy and Therapy. O. Marburg—p. 33
Transurethral Electrotomy in Surgery of Prostate. H. Rubritius—p. 36
*Processes of Immunization in Hyperthyroidism. J. Bauer, E. Kunc, W. Wilder and T. Schachter—p. 39
*Abnormal Shortness of Allantoic Stalk and Its Result. G. Politzer—p. 40
Formation of Metastases in Orogenic Pyemia During Childhood. I. Hofer—p. 42
New Observations on Circulatory Condition in Lower Extremities and Their Clinical Importance. R. Singer—p. 44

Processes of Immunization in Hyperthyroidism—Bauer and his associates observed that, if rabbits are given subcutaneous injections of small doses of thyroxine intermittently over a period of from six to eight weeks, they develop a resistance to thyroxine and finally no longer react to the injections with a reduction in the lipase and in weight. The serum of the animals that had become resistant to thyroxine, in contradistinction to the serum of normal rabbits, gave a complement fixation reaction with thyroxine. The authors state that this phenomenon is analogous to observations which other investigators made with gonadotropic substance. The observations they had made on rabbits induced the authors to test the serum of patients with disorders of the thyroid for its complement fixation capacity, by using thyroxine as the antigen. They found that the serums of patients with exophthalmic goiter produce a complement fixation reaction with thyroxine, the reaction was positive in the severe cases but negative in the milder cases and in cases in which treatment had been successful. Of fifty controls without thyroid disease, forty-seven gave a negative reaction. Of the three positive serums in this group two were from patients with a positive Wassermann reaction and one from a patient with hysteria. Since it is known that antibodies against nonprotein substances have only a relative specificity and as a rule react also to related substances, the authors employed the complement fixation reaction not only with thyroxine as antigen but also with diiodotyrosine. They obtained the same reactions with diiodotyrosine as with thyroxine. There were no serums that reacted to only one of the two substances. In evaluating the significance of their observations, the authors are convinced that the antibodies, which are demonstrable in the serum of patients with hyperthyroidism by means of the complement fixation reaction, have nothing in common with the antithyroid protective substances of the blood for the latter substances are reduced in patients with severe hyperthyroidism, whereas the complement fixation reaction becomes positive in these patients. Moreover, they think that the factors which elicit the complement fixation reactions with thyroxine and diiodotyrosine differ from the 'antihormones' which Collip postulated as an explanation for the resistance that develops against endocrine therapy. They concede that they are as yet unable to explain why an immunity reaction is produced by a physiologic secretion that circulates in the organism in increased quantities, but they emphasize that this phenomenon is truly an immunity reaction. Their studies indicated also that diiodotyrosine is not an antagonist of thyroxine, as had been assumed by some. They believe that it is a preliminary stage of the hormone which has an analogous although much weaker action than thyroxine.

Abnormal Shortness of Allantoic Stalk and Its Results

—Politzer describes a human embryo, which was approximately 8 mm in length and in which the axis had been turned 90 degrees. He shows that the curvature of the embryonal body was caused by an abnormal shortness of the allantoic stalk.

He suggests that this deformity may be the preliminary stage of congenital scoliosis, torsions of the vertebral column and other defects

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

SO 281 356 (Jan 25) 1936

- Puberty Psychosis L Van Der Horst—p 282
Pneumatosis Cystoides Intestini Hominis W A Leijer—p 290
Stenosis of Isthmus of Aorta E Van Leeuwen—p 296
*Lead Poisoning in Cigar Makers G H W Jordans A Zijlman and J Broos—304
*Striae of Nail in Arsenical Polyneuritis R A Mees—p 312

Lead Poisoning in Cigar Makers—Jordans and his associates describe the case histories of six cigar makers who were suffering from lead poisoning and state that this occurrence has not yet been reported in the literature. They think that lead poisoning of more or less degree is frequent in cigar makers and that pale, unhealthy looking persons of this trade justify the suspicion of chronic lead poisoning. The source of the poisoning is found in the zinc plates on which the cigar makers cut the tobacco. The authors conclude that the use of zinc plates for this purpose should be forbidden by law and that they should be replaced by wooden plates, which offer technical and hygienic advantages.

Striae of Nail in Arsenical Polyneuritis—In a patient suffering from polyneuritis produced by the administration of arsenic, Mees found that the typical transverse white striae of the nails, appearing some time after the ingestion of arsenic, contain six times as much arsenic as the ordinary nail substance. He states that the degree of sharp definition of the striae is related to the administration of one or more doses of arsenic, one dose producing sharply delimited striae while several doses cause the striae to be more diffuse. The forensic interest of the striae lies in the fact that the time of administration of the arsenic may be deduced from their appearance.

Acta Medica Scandinavica, Stockholm

87 189 364 (Dec 30) 1935 Partial Index

- Biologic Research on Diagnosis of Latent Malaria S C Liverato and C C Smith—p 189
Observations with Oleothorax Treatment A Gullbring—p 213
*Distribution of Platelets in Peripheral Blood H K Beecher—p 311
*Posthemorrhagic Uremia L Meyler—p 313
Influence of Low Molecular Hydrolyzates of Animal Organs on Reticulo-Endothelium and Phagocytosis A Egoroff and M Laptewa Popova—p 345
*Nerve Symptoms in Anemia Achylia Simplex L Abramson—p 358

Distribution of Platelets in Peripheral Blood—Beecher lists the physiologic number of platelets per cubic millimeter of blood according to the various methods of determination showing that some investigators consider the physiologic number to be 200,000 while others give values up to 900,000. He thinks that these wide variations are due to the fact that some fundamental condition has been disregarded. He describes observations that may account in part for the discrepancy between the various methods. The studies referred to were made with the Sandison Clark method. A window, which is placed in a rabbit's ear, makes possible observations at high magnification of the arterioles, capillaries and venules and of their contents in an intact animal and over a period of months. In observing the platelets in the circulating blood at a magnification of 400 diameters, a strikingly variable distribution of platelets was seen. A field with a moderately active circulation may be watched for a minute or longer and only an occasional platelet is seen passing through while at other times there are schools of them. From these observations the author concludes that one factor in the inaccuracy of platelet counting is the uneven distribution of platelets in the peripheral blood.

Posthemorrhagic Uremia—Meyler describes a form of extrarenal uremia that he observed in patients who became comatose after severe gastric hemorrhage. He first reports the observations on one patient in whom the necropsy revealed an ulcer with an open artery on the lesser curvature of the stomach. In order to gain a better insight into this form of uremia experiments were made on guinea-pigs and further clinical observations were made on several other patients. On the basis of these observations the author reaches the conclusion that posthemorrhagic uremia is due to the fact that large quantities of protein are destroyed and that the kidneys are not equal to the task of excreting the excess nitrogen. He points out

that this is a type of extrarenal uremia of which uremia due to hypochloremia and uremia caused by burns are the best known examples. He shows that all forms of extrarenal uremia are really originally "production uremias," for first there is an excessive production of protein and then the problem is whether the organism has a sufficient quantity of fluid at its disposal for the excretion of the excess of the nitrogenous waste products. It appears that people with gastric hemorrhage get into a serious condition of dehydration and it is shown that the dehydration leads to the often enormous toxic destruction of protein. That the uremia is not directly caused by the anemia was proved on guinea-pigs which were made anemic, were given considerable amounts of fluid by subcutaneous administration and did not pass into a state of uremia. Though the author does not suggest that in case of severe gastric hemorrhage death is caused by uremia, he thinks that the latter condition is nevertheless a serious complication, and he considers it advisable to administer large quantities of fluid in case of severe loss of blood.

Nerve Symptoms in Simple Achylous Anemia—After mentioning a number of investigators who observed acroparesthesia in patients with simple anemia and after citing one author who among ninety-five patients with funicular myelitis observed ten with a hypochromatic blood picture, Abramson points out that according to some authors paresthesias occur in from 33 to 50 per cent of patients with hypochromic anemia. His attention was directed to this problem by observations on a patient whose history and appearance suggested a simple anemia but who had slight symptoms of myelopathy. In view of the latter symptom, pernicious anemia was thought of and the blood was examined. However, the examination of the blood as well as the further development of the disease confirmed the diagnosis of simple anemia. After this case the author examined eleven cases of simple anemia for possible nerve symptoms and he detected them in six cases. Ascending paresthesias in arms and legs were present in three, but these paresthesias disappeared completely in two and improved greatly in one, together with the improvement in the blood status. In two other cases the nerve symptoms had the character of mild polyneuritis, while in the remaining case some of the reflexes were abolished or weakened, but there were no paresthesias. The author emphasizes that all these cases presented the blood picture as well as the other symptoms of simple anemia and that the symptoms of anemia as well as the nerve symptoms disappeared in response to iron therapy. He thinks that the nerve symptoms of simple anemia often escape detection because they are usually mild.

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Cancer and Tuberculosis in Alimentary Canal—Sifwenberg presents twenty-one cases of coincident cancer and tuberculosis of the stomach and thirteen of the cecum, and two additional cases of combined cancer and tuberculosis of the stomach and one of the cecum, all three diagnosed at the time the operations were performed. He says that in the stomach in which these cases usually occur in the cancer age, the cancer is as a rule primary and constitutes a favorable milieu for development of the tuberculosis, as in his second instance of implantation tuberculosis and presumably in the first instance in which the tuberculosis may have originated by the hematogenous route from the probable primary focus in the lungs. In the cecum the combination occurs at an earlier age and the tuberculosis is often primary, as in the third case described in which the tuberculosis is thought to have spread by the blood stream from the glands in the neck.

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GASTRO-INTESTINAL ALLERGY

IV THE LEUKOPENIC INDEX AS A METHOD OF SPECIFIC DIAGNOSIS OF ALLERGENS CAUSING PEPTIC ULCER

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The introduction of the leukopenic index as a method of allergic diagnosis is due to the work of Vaughn¹ on the effect of milk on allergic individuals during the performance of tests for liver function according to the colloidoclastic crisis test of Vidal, Abrami and Iancovescu, which is dependent on a fall in blood pressure, a fall in the total leukocyte count, and a prolonged clotting time after the administration of 200 cc of milk. The pertinent observation was that milk did cause a leukopenia in those patients subsequently found to be sensitive to milk. By repeated tests on a known allergic patient who knew by experience that certain foods were capable of reproducing clinical symptoms on each occasion, the leukocyte response to compatible and to incompatible foods was studied. Those foods producing allergic symptoms were likewise able to depress the total leukocyte count while compatible foods were in general followed by a rise in the total count. In this way a new method of allergic diagnosis came into being.

Rinkel,² in the attempt to relieve an intractable asthmatic patient who gave a negative skin test, made a study of the leukocyte response to foods in that individual. He found that three foods alone produced a positive balance and that all others tested depressed the total leukocyte count. Reasoning that a positive balance indicated compatible foods and that a negative balance indicated allergens, the patient was limited to a diet composed exclusively of those foods which were followed by a digestive leukocytosis. The result of this test diet was a cessation of symptoms after a trial of three days. The importance of this experiment being appreciated, the method was then employed on a large series of patients with excellent results.

This method of diagnosis has been used with success in several types of allergy, namely, asthma, allergic headache, hypersensitive rhinitis and gastro-intestinal allergies of various types. The method though admittedly tedious, appears to be accurate to a high degree. Besides its accuracy, which alone is of great value, it is also helpful in those persons who, though suspected of being allergic, are test negative, and in that group of allergic individuals who react to every-

thing for which they are tested. Both types can, of course, be managed by test diets and food diaries, provided proper cooperation can be maintained over a long period of time. The food diary is a boon at all times, but delayed and accumulative reactions are at times difficult to recognize. A more accurate and expeditious method of recognizing this type of allergen is to be welcomed. Unfortunately, many gastro-intestinal reactions are entirely subjective and their recognition frequently depends on the acuity of the patient. Poor results may at times be traced to faulty interpretation rather than to poor cooperation.

The idea that peptic ulcer in many instances is an expression of anaphylaxis on the basis of the Arthus phenomenon is not new.³ Kern and Stewart,⁴ from clinical experience, have expressed the opinion that there is an allergic relationship in peptic ulcer. There is abundant experimental background for these opinions.⁵ This theory was put into practice, and a series of thirty-three cases of peptic ulcer treated by allergic management alone, with no medication, was reported in November 1934.⁶ These patients were put on three meals a day, only those foods being limited to which they had been proved to be sensitive by skin testing and by food diaries. As a person usually becomes sensitive to foods eaten regularly in the past, it frequently happens that the foods restricted are those most commonly used in the conventional ulcer diet. In spite of this unorthodox treatment, the results obtained over a period of forty months were most encouraging. Since that time and since the advent of the leukopenic index, another series of six additional cases has been studied. These cases were all examined roentgenologically as well as by the other customary laboratory procedures. They are all cases of definite peptic ulcer, confirmed by x-ray studies, by a continuation of symptoms after repeated trials of orthodox medical management, and in one instance by the recurrence of symptoms after surgical intervention. No particular attention was paid to the presence or absence of an allergic history in the patient's past record, as there has been no attempt to select favorable cases. They happen to be the first cases presenting themselves for treatment after the leukopenic index was adopted as a means of study.

In the beginning of this experiment, it was the practice to perform skin tests by the intracutaneous method and to omit those foods from the diet which gave the most strongly positive reactions. As this work progressed, it seemed more advisable to test the foods most commonly used and to omit the ones that pro-

3 Gay, L. P. Gastro-Intestinal Allergy. The Duodenal Ulcer Syndrome. South M. J. to be published.

4 Kern, R. A. and Stewart, S. G. Allergy in Duodenal Ulcer. Incidence and Significance of Food Hypersensitiveness as Observed in Thirty Two Patients. J. Allergy 3: 51 (Nov.) 1931.

5 Iv, A. C. and Shapiro, P. F. Studies on Gastric Ulcer. J. A. M. A 85: 1131 (Oct. 10) 1925. Shapiro, P. F., and Iv, A. C. Gastric Ulcer. Experimental Production of Gastric Ulcer by Local Anaphylaxis. Arch. Int. Med. 38: 237 (Aug.) 1926.

1 Vaughn, W. T. Food Allergies. III. The Leukopenic Index. J. Allergy 3: 601 (Sept.) 1934. Further Studies on the Leukopenic Index in Food Allergy. Ibid. 6: 78 (Nov.) 1934.

2 Rinkel, H. I. The Leukopenic Index in Allergic Diseases. read at the thirteenth annual meeting of the Association for the Study of Allergy.

duced a negative balance. A satisfactory diet can be worked out more quickly this way and this procedure avoids one possible error that may occur if a food that has not been in the diet for several months is tested. If a previously restricted food is tested without its having been eaten a few times in the week preceding the count, a curve denoting compatibility may be obtained. Later curves may show a definite depression of the leukocyte count. An immediate depression of the count by a previously restricted food indicates a very toxic allergen, and it is not unusual for such a food to produce symptoms during the test period. It frequently occurred that there was a marked discrepancy between the skin tests and the compatible foods as determined by the feeding tests but this is to be expected as the etiologic diagnostic failure of the skin tests has been pointed out by numerous observers. Heretofore the only remaining proof has been reliance on a diary, but happily the leukopenic index has proved to be an aid of unexpected reliability and accuracy, not only in determining the allergic state but in determining the actual allergens at fault. Omission of foods producing a negative balance and the exclusive use of those producing a positive balance has resulted in cessation of symptoms and relief in every case so managed to date. Milk and wheat have been shown to be allergens in every instance and egg has been a compatible food in only three cases. As these foods are the ones most commonly used in ulcer diets and as they have been proved to be capable of reproducing symptoms on clinical trial after total omission it is not surprising that one characteristic of peptic ulcer is the cyclic recurrence of symptoms for many years. Wheat, milk and egg, however are not the only foods that are to be omitted as each individual has different sensitizations to foods, and to get a good clinical result these particular sensitizations must be recognized and restricted.

As is shown in the tables, actual allergens depress the total leukocyte count very definitely. They are also able to keep the interval counts below the level of the fasting leukocyte count. At times there is also a curve which can be classified only as an indeterminate reaction. True classification of this type can be made by clinical trial or by the use of the questionable food as a gastric test meal and by observing the response of free hydrochloric acid to it. Because of the impression that the usual high acidity associated with peptic ulcer was probably caused by the use of incompatible foods gastric analyses were done at the same time as the leukopenic studies, specimens of blood and stomach contents being taken every twenty minutes and the food studied being used as the gastric test meal. Contrary to expectations, foods depressing the leukocyte count were also capable of depressing the free hydrochloric acid values in a majority of instances. Though this finding is not constant, as is shown by the charts, it is striking enough to be more than a mere coincidence. Compatible foods, or those showing a digestive leukocytosis were accompanied by a rise in the free hydrochloric acid curve. This again was not an absolute constant, but, as the additional information of the response of free hydrochloric acid was available those which increased the free hydrochloric acid response were judged to be compatible foods and were replaced in the diet. Clinical trial has proved this assumption to be true as each food that was indeterminate by the leukopenic index but was capable of increasing the free hydrochloric acid value has been asymptomatic in the diet. Foods that were

used as a test meal and were accompanied by lowered hydrochloric acid values have induced recurrence of symptoms on each feeding experiment. This has been true of the indeterminate types as well as of those giving a clearly marked incompatible curve. In this connection, the leukopenic index indicates the degree of sensitivity, as a marked drop in the leukocyte count coincides with a complete absence or marked inhibition of free hydrochloric acid. Foods of this type have always been immediate pain producers by the feeding test. These antigens were characterized in another way, that is, the ingestion of these foods caused an immediate and definitely excessive secretion of mucus which is analogous to an allergic reaction in any other mucous membrane. This may explain the lowered free hydrochloric acid value due to the buffer action of mucus. From repeated tests it is questionable whether actual protein is the buffer in this instance, since fruit and vegetable juices have been quite as effective in this regard as egg white, meat and fish. A delayed rise in the free hydrochloric acid value is common after the use of an antigenic food which has greatly lowered or inhibited the free hydrochloric acid response, and this observation may possibly account for the fasting hyperacidity usually associated with peptic ulcer.

REPORT OF CASES

The following case reports illustrate the use of, and the results obtained by, the leukopenic index in determining incompatible foods which, when eliminated, allow cessation of symptoms and which, when reintroduced into the diet, reproduce in detail the classic syndrome of peptic ulcer.

CASE 1—A J, a man, aged 33, a machinist, complained of tearing pain in the epigastrium about two hours after meals, which was relieved by food, and an aching pain in the lower lumbar region of the back. The onset of the pain occurred about nine years previously when a stomach disorder of a similar nature was present for about one month. This pain had recurred each spring with gradually increasing severity and duration but this year the pain had come on earlier and was much more severe. The present attack had been present for three months had been getting worse steadily and was preventing sleep. There was slight relief from heavy magnesium oxide and there was relief from night pain with food. There had been no vomiting until the first day of consultation. There was no blood in the vomitus and there had been no tarry stools. There was usually no nausea but gas and bloating were frequent. Belching was frequent and was accompanied by slight relief. The pain was in the epigastrium, it was not referred and it began two hours after meals. The pain was relieved by food and was partially relieved by alkali and by manual pressure over the epigastrium. The character of the pain was described as being tearing and burning. There had been a good appetite but the diet had been limited by various physicians previously consulted. There had been a tendency to rather marked constipation and liquid petrolatum had been taken each day. There had been a slight loss of weight during the past few months which the patient attributed to loss of sleep because of pain.

The past history was unimportant and there had been no manifestations of allergy. The patient's father died of heart disease, his mother was living and well, and he had two brothers living both of whom had symptoms of peptic ulcer. One of the brothers had had a gastro-enterostomy performed with a recurrence of symptoms. The patient was married. His wife and his two children were well. His wife had never had any miscarriages. He did hard work from 8 a. m. to 5 p. m. The habits of life were regular, he did not drink and he rarely smoked. He maintained his own home and had breakfast and dinner at home.

The patient was of sthenic habitus. The blood pressure was 95 systolic 60 diastolic. The weight was 59.5 Kg. The musculature was good but the nutrition was rather scanty. There

was a moderate erythematous spread when the skin was stroked. The pupils reacted to light and on accommodation. The nostrils were clear, the teeth were well kept and in good repair and the throat was slightly reddened. The thyroid was not palpable. The lungs were clear and there were no rales. The heart was regular and clear and there were no murmurs. On examination of the abdomen there was a point of tenderness in the epigastrium of about 2 degrees severity. All reflexes were normal.

Roentgenologic examination of the gastro intestinal tract revealed a deformed and tender duodenal cap making the diagnosis of duodenal ulcer highly suggestive. Other routine laboratory examinations were not significant. The results of the skin tests and leukopenic index studies are indicated in table 1, and the results of the gastric analyses are expressed in chart 1.

The actual diet from the combined gastric analysis and leukopenic index studies consisted of rice, apples, cauliflower, asparagus, chicken, oatmeal, beets, cabbage, sweet potatoes, coffee, pork and fish. It so happened that wheat, milk and eggs were the first foods tested and, as they were incompatible, they were taken out of the diet immediately. This initial omission was of distinct benefit, so no further restrictions were advised until the entire study was completed. Since the restriction of incompatible foods there has been absolute comfort and there has been no more trouble with constipation except after an occasional deviation from the diet. During this entire period the patient continued at his work and, of late, has been working overtime at night. One evening at a party, a well meaning hostess insisted that the patient eat some fresh angel food cake. There was acute pain in one hour which lasted most of the night and which was not relieved by food in the revised diet. Eight months later the patient added milk and potatoes to his diet of his own accord and experienced a prompt return of all symptoms. Pain disappeared in two days after milk and potatoes were again omitted, but constipation continued for ten days. The man is now perfectly comfortable, he eats three meals a day, works every day and takes no medication.

CASE 2—T. M., a man, aged 32, a liquor dealer, complained of early morning pain which would awaken him and which was relieved by food. It had been assumed that the pain was due to gas, because belching had always given partial relief. This pain had been present for about a year, but the patient had ignored it until two months before the present consultation, when he fainted while at work. On regaining consciousness he vomited a large amount of blood, fainted again, and was then taken to a hospital. On admission to the hospital all foods and fluids were restricted by mouth, a nasal tube was passed and the stomach was washed free of clots with physiologic solution of sodium chloride. An ice cap was placed on the epigastrium, 10 per cent dextrose solution was given intravenously, morphine was administered and 1 cc of parathyroid extract was given intramuscularly twice daily for two days to decrease the bleeding time. As there was no tendency to further hemorrhage, food was given gradually and in ten days the patient was allowed to return to his home. After an interval of three weeks a roentgenologic examination of the gastro intestinal tract was made and a diagnosis of duodenal ulcer was returned. During this period there had been rather more pain than usual and he had been eating soups, custards, raw and coddled eggs, bread and milk and he had been drinking a large quantity of milk.

The past history was not important except that there had always been a good deal of sneezing. There was no other history suggestive of allergy. He had been in the habit of drinking beer every day. His father died of pneumonia, his mother was living and well. The patient was married. His wife was well, she had never been pregnant.

The patient was of sthenic habitus and pale. The blood pressure was 110 systolic 70 diastolic. He weighed 51 Kg. There was no reaction when the skin was stroked. The pupils reacted to light and on accommodation. There was a slight excess of mucoid nasal discharge. The teeth were in good repair and the throat was slightly reddened. The thyroid gland was not palpable. The lungs and heart were normal. There was a point of tenderness of about 1 degree in severity in the epigastrium. All reflexes were normal.

A comparison of the skin tests and the compatible foods by the leukopenic index and by gastric analysis is noted in table 2.

and chart 2. In this case, as in case 1, wheat, milk and eggs were eliminated first and there was an immediate and complete cessation of symptoms. It will be noted that these foods were the ones used after his hemorrhage, and it was during this period that he experienced an unusual amount of pain. No other restrictions were imposed until the study was completed. The final diet consisted of cauliflower, apples, coffee, beets,

TABLE 1—Results of Skin Tests and Leukopenic Index Studies in Case 1

Incompatible	Leukopenia	Skin
Potato	1 400	+++
Orange	1 200	Neg
Beef	2 800	Neg
String bean	400	+++
Corn	2 200	+++
Spinach	2 200	Neg
Carrot	2 200	++
Pea	800	Neg
Turnip	1 800	Neg
Tomato	2 000	Neg
Prune	600	Neg
Navy bean	800	Neg
Wheat	1 800	++++
Milk	2 200	++
Egg	2 000	Neg
Compatible	Leukocytosis	Skin
Lamb	1 200	Neg
Rice	600	++
Apple	1 400	Neg
Cauliflower	600	Neg
Asparagus	600	+++
Chicken	1 800	+++
Oatmeal	2 400	+++
Beets	1 200	++
Cabbage	400	++++
Foods Indeterminate by Leukopenic Index but Compatible by Gastric Analysis		
Sweet potato		Neg
Coffee		+++
Pork		Neg
Fish		Neg

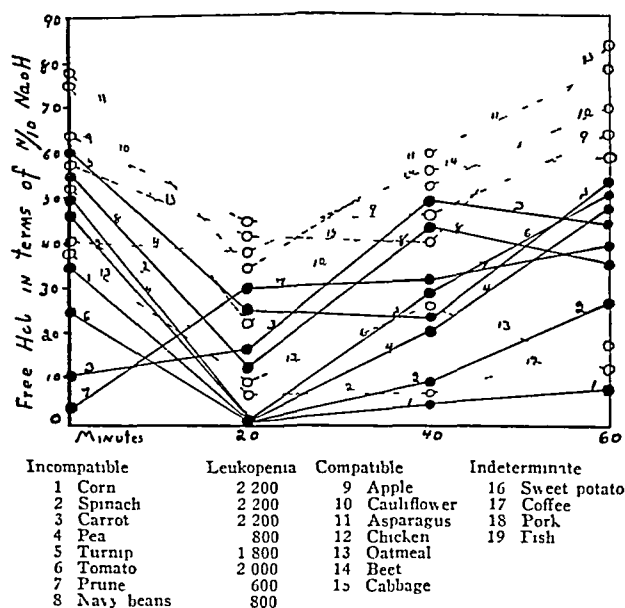


Chart 1—Fractional gastric analyses in case 1. The four charts show the response of free hydrochloric acid to foods used as test meals with coincidental leukopenic index study. Numbers refer to foods listed below the charts. The degree of leukopenia is listed opposite the incompatible food. Solid lines indicate incompatible foods, broken lines compatible foods.

string beans, cabbage, carrots, tomatoes and oatmeal. This was not a very interesting diet but it was felt that all foods giving an incompatible reaction should be restricted in order to avoid a quick sensitization to allergens that at the present time were subclinical in type. It has been observed that the regular use of these foods soon results in clinical manifestations of peptic ulcer even though the major allergens are out of the diet. The occasional use of indeterminate foods and those which do not reproduce pain except by cumulative action does not seem to be harmful.

The patient was free from pain and discomfort from Dec 17, 1934 to June 9, 1935, when he ate a sandwich while on a picnic. He had pain in about one hour which lasted for about six hours. From the time the diet was instituted until the short recurrence of pain there had been a gain in weight of 19 pounds (8.6 Kg). Two months later he again broke his diet this time eating wheat beef and a creamed soup for lunch and

TABLE 2—Results of Skin Tests and Leukopenic Index Studies in Case 2

Incompatible	Leukopenia	Skin
Egg	1 500	Neg
Milk	1 600	++
Wheat	1 500	++++
Pea	1 600	Neg
Potato	1 800	++
Beef	3 400	+++
Lamb	2 700	++++
Corn	4 000	+++
Spinach	1 600	Neg
Asparagus	4 700	Neg
Orange	5 000	Neg
Pork	2 200	+++
Prune	3 400	Neg
Sweet potato	400	+++
Fish	3 600	Neg
Rice	3 500	++
Compatible	Leukocytosis	Skin
Cauliflower	400	Neg
Apple	1 200	Neg
Coffee	200	+++
String bean	400	+++
Beets	600	+++
Cabbage	3 000	++
Foods Indeterminate by Leukopenic Index but Compatible by Gastric Analysis		
Carrot		Neg
Tomato		+++
Oatmeal		+++
Food Indeterminate by Leukopenic Index and Incompatible by Gastric Analysis *		
Chicken		

* This food produces pain on clinical trial

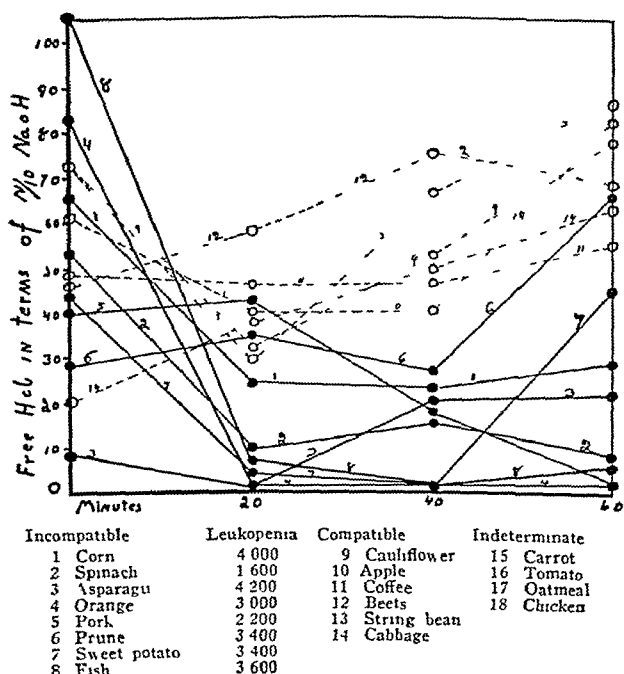


Chart 2—Fractional gastric analyses in case 2

repeating the same foods at his evening meal to determine whether he had acquired a tolerance for them. Two hours later he felt dizzy and experienced a severe substernal pain. The next day he passed tarry stools and the dizziness continued. He did nothing about his condition except to be more careful about his diet and a few days later he felt perfectly well again. One week later he came for his customary check

up. The hemoglobin was 82 per cent, the blood pressure was 115 systolic, 70 diastolic, and the weight was 68.5 Kg, making a total gain of 17.5 Kg in nine months. He is comfortable again and intends to avoid the major allergens in the future.

CASE 3—Mrs J V, aged 44, in August 1928 complained of pain in the right upper quadrant of the abdomen which was referred to the back and which had been present for one year. The onset had been gradual, with sensations described as indigestion occurring at irregular intervals, depending on the type of foods eaten. She usually felt well in the mornings or while at rest, as effort seemed to increase her discomfort. Since the patient felt better on a light diet, her food intake had been limited accordingly. Three weeks prior to examination there had been an attack of indigestion followed by pain in the right upper quadrant of the abdomen and by pain referred to the right side of the back. Since that time the pain had been rather constant but there were occasional periods of relief during the day. During this period there had been frequent vomiting of recently eaten foods and there had been much gas and bloating. The distention was in the lower part of the abdomen and was noticed particularly after the heavier foods. The bowels moved normally. The patient was nervous, slept poorly and had lost 10 pounds (4.5 Kg). Ten years previously the appendix and a fibroid tumor of the uterus had been removed. Her mother had suffered from gallstones and had died following cholecystectomy. Her father died of senility. The patient had been married for fifteen years and her husband, a farmer was living and well and two sons were living and well. There had been no miscarriages.

The patient was of hypersthenic habitus, and weighed 83.7 Kg. The blood pressure was 125 systolic, 70 diastolic. Nutrition was overgood and the complexion was florid. The pupils reacted to light and on accommodation. The teeth were well kept, the throat was reddened and the tonsils were enlarged. The nasal mucosa was excessively moist and grayish. The thyroid was enlarged and soft. The lungs were normal and the heart sounds were regular and clear. There was a post-operative scar in the lower midline of the abdomen and there was tenderness of 1 degree in the right upper quadrant. As a chronic cholecystitis was suspected from the history, a cholecystogram was done and the gallbladder was visualized perfectly in all films. A barium sulfate meal was then given and a grossly deformed and tender duodenal cap was demonstrated. The Sippy routine of ulcer treatment was instituted and the patient made reasonably satisfactory progress until January 1931 when signs of subclinical obstruction developed. As the patient had grown careless with her diet she was again put on liquids with alkali and atropine and gradually improved. After this experience the diet was observed more carefully and though there were exacerbations of pain from time to time there was no more serious trouble until January 1935 when the same type of pain returned, but much more severely. This pain had been coming on gradually and the patient had been vomiting at night for several months. The vomitus at times contained blood. The severe pain which had been present for about one month prior to reexamination occurred two hours after meals and at night and was relieved by vomiting. There had been no tarry stools and the bowels had moved normally except for attacks of diarrhea after the recent attacks of vomiting. There had been much gas and distention of the lower part of the abdomen. On questioning the patient remembered that her father was subject to asthma and that she herself had had attacks of asthma while a child in Switzerland. She also recalled that peaches, spinach and pastries had always caused abdominal pain and that milk butter and lard had always caused gas. The roentgenologic examination was repeated and revealed a definite pyloric obstruction that increased the emptying time of the stomach for considerably more than six hours. As a consequence, the patient was given ten injections of histidine with excellent results as the emptying time of the stomach decreased markedly. The duodenal cap could then be visualized and it exhibited the gross deformity characteristic of duodenal ulcer. Skin tests were done and the patient was asked to keep a food diary. A few foods were excluded by the diary alone while wheat, milk and potatoes were excluded by the leukopenic index. Egg proved to be a compatible food. Pain had continued after histidine but histidine had apparently relieved the accompanying ulcer edema to such an extent that

there was no longer an obstruction. The elimination of wheat, milk, potatoes and pork from the diet has made the patient perfectly comfortable. She is now eating three meals a day, takes no medication and works every day. She can eat any of the compatible foods listed in table 3 with impunity, but any of the incompatible foods cause an immediate return of pain. These foods may be her only allergens but it was thought advisable to continue the leukopenic studies even on the list compatible

TABLE 3—Results of Skin Tests and Leukopenic Index Studies in Case 3

Incompatible	Leukopenia	Skin
Wheat	1,000	+++
Milk	400	+++
Potato	800	++++
Compatible	Leukocytosis	Skin
Egg	2,600	+++
Pea	2,800	++
Compatible Foods By Diary Alone		
Asparagus		Neg
Beet		++++
Beef		Neg
Cabbage		++++
Cauliflower		Neg
Chicken		++
Coffee		Neg
Corn		Neg
Lamb		+++
Lettuce		Neg
Fish		Neg
Orange		Neg
Tomato		+++
Rice		+++
String bean		Neg
Sweet potato		++

by diary. The patient, however, did not think so and when asked to come in for more food studies replied, "What is ze use when all day long I seeng like ze bird."

CASE 4—H C C, a man, aged 43, complained of gas and bloating after certain foods which were followed by a sensation of severe pressure and severe pain. The onset had been twenty years before with pain after meals and night pain. He was told at the time that he had a duodenal ulcer. The symptoms persisted for several years until an attack of typhoid. After his recovery from typhoid it was noticed that the pain had disappeared but that severe indigestion continued. There was a severe hemorrhage from the stomach about one year after the attack of typhoid. After this experience he was treated by diet and medication with little benefit until a gastro-enterostomy was performed at one of the large clinics. After the operation there was a moderate degree of clinical improvement, but there has always been digestive discomfort of varying degrees of severity. Three years before examination another severe hemorrhage had occurred. After rest in bed and a liquid diet there was again improvement for a few months, and then another hemorrhage. As the patient was on a careful diet he merely stayed in bed until there was no more bleeding and then went on his way as usual. There had been no other illnesses or operations in the past history. There was never any fever but he had always caught cold rather easily. There was no chronic cough. Frontal headache had been frequent and troublesome. There was no personal history of allergy, but the patient's daughter had urticaria. There were some known foods that caused immediate discomfort and others that were suspected. The gastric symptoms consisted of gas and bloating for three or four hours after meals and a pressure sensation which at times became a severe pain. The greatest ease and comfort was enjoyed when there was no food in the stomach. There was rarely any nausea or vomiting. The appetite was good and the diet consisted of eggs, orange juice, coffee, milk and malted milk soups, custards, cold meats and either baked or mashed potatoes. The bowels had always been normal. There was no weight loss and there was but little difficulty in sleeping. The father and mother both died following cerebral hemorrhages. There were two brothers living but one of them had been ill with multiple lung abscesses and was still in a serious condition. The patient's wife was in good health and his one daughter was in good health. The habits of life were regular. The patient's occupation was that of first assistant to the over-

worked and harassed head of a large corporation and, though his hours were supposed to be from 8 a m to 5 p m, there was considerable night work to be done and work was always done under pressure. To add to the man's physical ailments, he had the responsibility of his brother's illness and the usual family responsibilities that are shifted to efficient men.

The patient was of hyposthenic habitus. The blood pressure was 110 systolic 80 diastolic. He weighed 55 1/2 Kg. The nutrition was moderately good but the nail beds and mucous membranes were rather pale. There was a moderate erythematous response on stroking the skin. There was a marked arcus senilis but the pupils reacted to light and on accommodation very promptly. The nostrils were clear. The teeth were well kept and in good repair. The throat was reddened. The thyroid was palpable but soft, and there was no increased vascularity. The heart and lungs were normal. There was a postoperative scar in the upper part of the abdomen. There was tenderness of 1 degree in the epigastrium and there was rather marked distention of the lower part of the abdomen with gas. All reflexes were physiologic.

On roentgenologic examination of the gastro-intestinal tract there was partial functioning of the gastro-enterostomy and deformity of the duodenal cap. Very marked reactions were obtained by skin test with asparagus, beet, cabbage, chicken, coffee, milk, oat, onion, pepper, potato, rice, sweet potato and wheat. These foods were eliminated and testing by a trial diet and by a food diary was undertaken. By diary and by clinical test it was found that all cereals with the exception of rice, were distinctly and violently antigenic. It was also proved that the repeated use of chocolate, string beans and potatoes, by cumulative action, caused discomfort in a less degree. Milk was suspected but milk as an antigen could not be proved by diary, as its action was later proved to be a slowly accumulative one. The patient cooperated in an admirable and extraordinarily intelligent way with but one deviation from his instructions. This instance occurred while out of town on a business trip and consisted of the self administration of a cathartic containing phenolphthalein. This drug brought on a violent attack of urticaria, and during this attack, whether it was a coincidence or whether there was a similar reaction in the stomach, another hemorrhage of slight degree but accompanied by tarry stools occurred. From that time to the present, progress has been very satisfactory but it has been very difficult to increase the diet. Milk, though not proved by diary, was demonstrated as an allergen by the leukopenic index and there

TABLE 4—Results of Skin Tests and Leukopenic Index Studies in Case 4

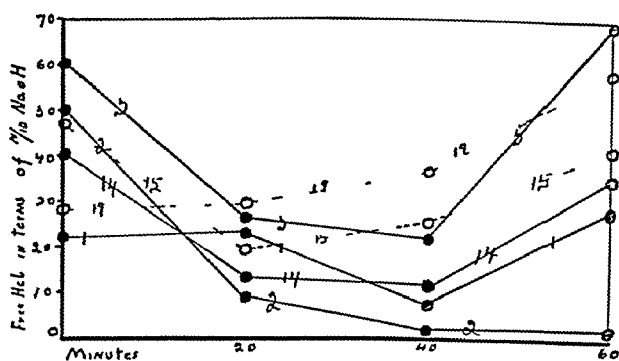
Incompatible	Leukopenia	Skin
Milk	1,000	Neg
Pork	800	+++
Orange	2,800	Neg
Compatible	Leukocytosis	Skin
Beef	1,000	Neg
Egg	1,200	Neg
Apricot	1,800	Neg
Strawberries	600	+++
Compatible Foods By Diary Alone		
Corn		+++
Prunes		Neg
Tea		Neg
Rice		++++
Pea		+++
Beans		+++
Potato		Neg
Lettuce		+++

has been distinct relief since its omission. As will be observed in table 4 there was a wide variation between the skin tests and the actual allergens as determined by diary and by the leukopenic index. Furthermore, the patient's personal observations have been most interesting as he is able from his diary record, to predict the outcome of his leukopenic index studies in most instances. His compatible list consists of beef, jello, eggs, corn, plums, prunes, butter and tea, but he is able to eat rice, peas, beans, potatoes and lettuce if he does not eat any of these foods too often. That is, rice, peas, beans, potatoes and lettuce produce pain by cumulative action if they are repeated in the diet any oftener than every third day.

CASE 5—J T A, aged 45 a high school principal complained of a sensation of emptiness of the stomach and a sensation of fulness and dyspnea after meals. The trouble began with a desire to yawn, which persisted but yawning did not relieve whatever caused the urge to yawn. About four years before there developed a sensation of gnawing emptiness of the stomach when the stomach was empty which was only partially relieved by food. After meals there was a sensation of dyspnea,

TABLE 5—Results of Skin Tests and Leukopenic Index Studies in Case 5

Incompatible	Leukopenia	Skin Tests
1 Wheat	1 600	+++
2 Milk	2 600	Neg
3 String bean	1 800	Neg
4 Potato	1 700	+++
5 Orange	1 200	Neg
6 Peach	1 850	Neg
7 Pork	1 000	++++
8 Apple	600	Neg
9 Rice	1 000	+++
10 Chicken	800	++++
11 Asparagus	1 400	+++
12 Beet	800	+++
13 Corn	1 000	Neg
14 Beef	200	++++
Compatible	Leukocytosis	Skin Tests
15 Egg	1 600	Neg
16 Pea	1 700	Neg
17 Lamb	1 400	Neg
18 Spinach	2 800	Neg
19 Tomato	1 400	Neg
20 Prune	2 200	Neg
21 Rye	400	Neg



Incompatible	Leukopenia	Compatible	Leukocytosis
1 Wheat	1 600	15 Egg	1 800
2 Milk	2 600	16 Pea	1 200
3 String beans	1 800	17 Lamb	1 400
4 Potato	3 200	18 Spinach	2 800
5 Orange	1 200	19 Tomato	1 400
6 Peach	1 800	20 Prune	2 200
7 Pork	1 000	21 Rye	400
8 Apple	600		
9 Rice	1 000		
10 Chicken	800		
11 Asparagus	1 400		
12 Beet	800		
13 Corn	1 000		
14 Beef	200		

Chart 5—Fractional gastric analyses in case 5

which at times was severe and as a result exercise had been limited. Occasionally this dyspnea occurred a few hours after meals and then it was relieved by food. There was an attack of influenza shortly after the onset of the gastric symptoms and the symptoms had been worse since that time. The patient had been told that he had a duodenal ulcer and he received some benefit from conventional ulcer treatment. There had been no fever and no symptoms suggestive of allergy. The gastric symptoms were confined to a sensation of fulness and a moderate amount of belching. The pain was in the epigastrium and though constant, there was a moderate degree of food relief and some relief from lying down. The pain was described as an empty gnawing sensation. The diet had been composed mainly of cereals, milk, and eggs as advised by his local physician. Constipation had been marked and magnesia magma had been used as a laxative. Sleeping had been difficult and there had been a slight loss of weight attributed to broken rest. The

past history consisted of a very mild attack of joint pain which was not disabling, and a tonsillectomy complicated by an abscessed throat. The patient's father died of kidney disease and his mother died of pneumonia. There was one brother and one sister, both of whom were well. The habits of life had always been regular but the patient had been getting much less exercise during the past few years than he was accustomed to having. Following an active athletic college life the coaching of football and track had been a part of his teaching duties.

The patient was of sthenic habitus. The blood pressure was 110 systolic 70 diastolic. He weighed 660 Kg. The color and nutrition were good. There was a moderate reaction when the skin was scratched. The pupils reacted to light and on accommodation. The nostrils were clear. The teeth were in good functional repair. The throat was reddened and the tonsils were absent. The thyroid was not palpable. The lungs and heart were normal. There was tenderness of 1 degree in the epigastrium. All reflexes were physiologic. The clinical impression of duodenal ulcer was confirmed by roentgen examination. Skin tests were done and beef, chicken, coffee, pork, potato, fish, condiments and corn, which reacted strongly, were eliminated from the diet. The patient was then put on a food diary in order to prove or disprove these foods as allergens. As there was but little change after an adequate test period tests by the leukopenic index were done with the results listed in table 5. In this study two errors were made. Corn was tested after a prolonged abstinence and a curve denoting compatibility with a leukocytosis of 1,600 was obtained. Corn was then replaced in the diet but produced pain consistently. The test on corn was then repeated and there was a loss of 1,000 cells in twenty minutes. Corn as a food was then discontinued. Beef caused a loss of 200 only in twenty minutes followed by hyperleukocytosis at forty, sixty and ninety minutes. The initial insignificant loss was disregarded because of the indeterminate result of the gastric analysis, and beef was allowed as a food. It proved to be a symptom producer on trial and was discarded. The present diet consists of eggs, peas, lamb, spinach, tomato, prune and rye. The patient is perfectly comfortable on this diet and is eating but three times a day. The only medication is liquid petrolatum.

CASE 6—B C G a man aged 55 complained of nausea, pain and pressure in the epigastrium, which was constant but which was partly relieved by food. The onset of the illness had occurred about fifteen years before. He had been a heavy whisky drinker but finally had to stop drinking because of nausea. This nausea was thought to be due to biliousness, and he began taking mild mercurous chloride and laxatives of his own accord. Shortly after this episode he began to be conscious of hunger pain and a pain that was referred to his back. As the patient had a yellowish color, his physician apparently thought he was suffering from cirrhosis of the liver and from gallbladder disease and an operation was advised. The patient was told that at operation the liver and gallbladder appeared to be normal but that the appendix was diseased and that it had been removed. No comment was made to the patient about the duodenum but a diet was advised, and, since he was more comfortable on this routine than on other foods, he had adhered to this original menu which was essentially a modified Sippy diet. Since the operation the patient has been roentgenographed numerous times in various cities and had had a diagnosis of duodenal ulcer made five times by different radiologists. There had been ulcer symptoms fairly constantly for fifteen years but there had also been periods of comparative comfort. Soda crackers had been kept within easy reach at night at all times as a few crackers usually relieved night pain and permitted sleep. Unwise eating or the smallest drink of liquor brought on an attack of pain that persisted for three or four weeks. Washing the stomach gave relief and gastric lavage had been practiced from one to three times a day for many years. He caught cold easily and colds hung on. Headaches were rare but there was a general aching over the body and a feeling of toxaemia. There was no evidence of allergy in the past personal history or in the history of the family. Constipation had been troublesome and there had never been an evacuation without the use of magnesia magma. There had never been any blood or mucus in the stools. The weight was 20 pounds (9 Kg.) under the usual normal. The health, other than the present condition had always been good. The patient's mother had an ulcer of

the stomach but died following a broken hip at the age of 82. His father died in a like manner at the age of 75. There was one sister, she had a goiter which was probably colloid in type. The patient's wife was living and well and there were four daughters, living and well. The habits of life had been quite regular for the past fifteen years.

The patient was of sthenic habitus. The temperature was 98 F and the blood pressure 90 systolic, 55 diastolic. The nutrition was rather scanty. The skin had a yellowish tinge and there was a moderate scratch reaction. The pupils reacted rather sluggishly to light and on accommodation. The nostrils were clear, the teeth were in good repair and the throat appeared to be normal. The thyroid gland was not palpable. The heart and lungs were normal. The abdomen was distended with gas and there was a small localized area of muscle spasm in the right epigastrium. The liver edge was not palpable and there was no liver tenderness. There was a postoperative scar in the right rectus region and there was an inguinal hernia on the right side supported by a truss.

Wheat, milk, egg and potato were tested in the order named, and each food caused a marked loss of cells. These foods and all cereals were restricted immediately and these restric-

is at times necessary for a food to be in a diet for a week or ten days before symptoms are produced and several days of abstinence are necessary before its influence disappears.

This confusion can be overcome by the use of single food testing and the leukopenic index. A definite and sustained leukocytosis after food ingestion indicates a food which is entirely compatible and is symptom free alone or in a mixed diet. A loss of leukocytes after a single food intake indicates the reverse reaction that the food in question is an actual allergen and that it is able to reproduce symptoms. This has been demonstrated repeatedly, by accident and by purposeful feeding. It is important that a food to be tested should be included in the diet a few times during the week preceding the test. Apparently the leukocyte response becomes refractory to an occasional previously restricted food until it has been in the diet for a time. Repeated tests on a food of this type produce curves going from a sustained leukocytosis to a leukopenia that decreases with each succeeding test.

An immediate leukopenia is significant of an allergen, and leukopenia of slight degree followed by hyperleukocytosis has the same significance. The majority of major allergens used as a gastric test meal have the ability to depress, or to inhibit totally, the free hydrochloric acid secretion while compatible foods are followed by a normal response. Foods that are indeterminate by the leukopenic index may at times be properly classified by the response of free hydrochloric acid to them. The variation in acid values may be due entirely to the presence or absence of the buffer action of mucus and the secretion of a marked excess of mucus in the presence of a known and proved allergen is probably a protective mechanism similar to the allergic reactions of any other mucous surface.

It appears, then, that the pain of peptic ulcer occurs in the presence of antigenic foods and in the presence of an achylia or an acidity which is much lower than the usual normal for that individual. It also appears that a normal response of an increased secretion of hydrochloric acid indicates a compatible food and that a lowered acidity value indicates an incompatible food. It also appears that the usual method of employing test meals is at fault in that the results obtained are dependent on that individual's reaction or sensitization to that particular food, because gastro-intestinal allergy is much more frequent than is appreciated.

It should be pointed out that there is frequently a relationship between the degree of depression of leukocytes and the antigenic power of the food in question. In general, however, the more marked the leukopenia the more antigenic the food, and also the more marked the leukopenia the more the lowering of the hydrochloric acid value.

Though complete relief of peptic ulcer symptoms can be given a patient by feeding foods that are compatible by the leukopenic index, the objection may well be raised that conventional methods of treatment also give relief. The answer to that objection is that they do, but by a method of feeding repeated doses of the chief offending foods. By the regimen of rest, doses of antigen at frequent intervals and the added protection of belladonna, a state of antianaphylaxis is built up that does indeed promote a cessation of symptoms. This state of antianaphylaxis persists until its balance is disturbed by a gradually increasing diet and then symptoms are likely to recur. Not only is relief of symptoms by antianaphylaxis possible in any other type of allergy

TABLE 6—Results of Skin Tests and Leukopenic Index Studies in Case 6

	Incompatible	Leukopenia	Tests
1 Wheat		1200	None
2 Milk		800	None
3 Egg		2400	None
4 Potato		2000	None

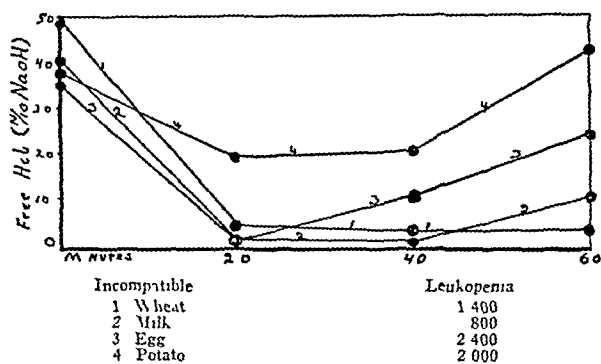


Chart 4—Fractional gastric analyses in case 6

tions have been all that has been necessary up to the present. No further tests have been done. The patient still experiences a moderate amount of discomfort at times but he is greatly improved and he is no longer forced to lavage his stomach to keep comfortable.

COMMENT

In the foregoing presentation, six unselected cases of peptic ulcer have been treated on the premise that peptic ulcer is an allergic manifestation.³ Patient 3 had a definite personal and family history of allergy, patient 2 had only the history of sneezing as a possibility of hypersensitive rhinitis, and patient 4 had a daughter with urticaria. There was no allergic history in the other three cases. Several points of interest have developed during the course of this study, one of them being that wheat and milk, which form the basis of usual ulcer diets, were definite allergens in every patient. Egg was an allergen in three or 50 per cent of the cases. It was also observed that skin tests are of little or no value in gastro-intestinal allergy, mainly because the clinical reactions of some of the major allergens and many of the minor ones are of the cumulative type. This finding limits the reliability of the skin test practically to inhaled allergy. It follows then that food diaries can be definitely misleading. It

but an appreciation and understanding of this phenomenon is most important in properly interpreting a food diary. The important point is that a food producing a symptom is also capable of partially relieving that symptom when taken later. In other words, the pain of peptic ulcer may be due to a localized anaphylactic spasm which is relieved by antianaphylaxis or actually by the interval feeding of an antigenic substance which originally caused the spasm. This was strikingly demonstrated by case 1, in which pain developed from a food composed of wheat and egg white but relief was not possible from eating foods known to be compatible. Before the institution of a correct diet, food had always given the patient relief from ulcer pain. Expressed differently, antigenic foods relieve pain and simultaneously reduce the normal optimal gastric acidity, which is a condition approximated by the use of alkali and belladonna. A diet composed of compatible foods exclusively is capable of giving complete relief from ulcer symptoms and is capable of freeing the patient from medication, from interval feedings and from the necessity of hospitalization.

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HISTORY TAKING IN ALLERGIC DISEASES

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The successful treatment of hay fever, asthma and eczema, like the successful treatment of other diseases depends on a complete understanding of the patient and his particular problem. In the allergic diseases this is especially true because, as Pirquet¹ has described, the symptoms depend on the peculiar capacity of the individual to react toward certain foreign substances. Not only must the physician understand the physiologic changes in the body of his patient, but particularly in the cases of hay fever, asthma, eczema and the other manifestations of allergy he must understand the patient's environment, his contacts with the various foreign substances that it may contain, and his reaction to these contacts. Recent clinical experience has led to the use of certain "tricks" in history taking in allergic diseases which are of such practical importance that their recognition constitutes a virtual advance in diagnosis and treatment.

First of all the physician must know whether or not the symptoms of which his patient complains are probably of allergic origin. Elsewhere I² have laid stress on the five criteria of allergy—those symptoms and signs which are characteristic of each manifestation of clinical allergy and which when found, are helpful to the diagnosis. These criteria are: 1. A characteristic symptom dependent on a characteristic local pathologic condition. 2. The presence of some other allergic symptom in addition to the first. 3. A positive family history of allergy. 4. Positive skin tests. 5. A blood eosinophilia. Obviously, the physician cannot give proper treatment until he can determine that his patient has hay fever and not sinusitis, or that he has asthma which depends on allergy and not on heart disease or tuberculosis, or perhaps a wheezy bronchitis.

Eczema is easily confused with various fungous infections of the skin, urticaria with scabies, migraine with many varieties of headache, and so on. Differential diagnosis is always important, and the diagnosis, which the patient himself often assumes, must not be taken for granted. It is not my purpose in this paper to discuss the details of differential diagnosis but it is necessary to point out that they exist and may be easily overlooked.

Furthermore, any of the allergic diseases may coexist with and be complicated by some other disease. Even if the patient does have asthma, for example, it is still necessary to make sure that he does not also have organic disease of the heart or lung or even a tracheal obstruction of which his so-called asthma is merely the presenting symptom.

Meantime, the allergic diseases are common (text books say that from 1 to 4 per cent of the population is afflicted) but "cures" are not so common. "Cures" of the allergic symptoms (though not of the underlying allergy) result whenever the particular substance or substances can be found and eliminated—the family cat, the feather pillow or the floss mattress, for example, or whenever the patient moves away from it or them. This happens more often in the textbooks than in actual practice. The physician must realize that the dramatic relief of symptoms frequently described as the result of a happy finding in the typical "textbook" cases occurs in only a small proportion of the whole number of patients. These cases are almost in a class by themselves. Always, however, there is hope that the next case will belong to this typical group and that the cause of trouble will be as easy to find here as in the other "textbook" cases. Furthermore, there is always hope—and justifiable hope—that the typical "textbook" group will be extended by new knowledge into many directions to embrace an ever greater proportion of allergic patients.

Since the fundamental nature of allergy, of the capacity to develop sensitiveness and then to react to the specific substance, is still unknown, present interest, at least from the practical point of view, concerns the exciting cause of the symptoms.

Diagnosis of the exciting cause of asthma, sometimes referred to as the "trigger" mechanism, rests on three factors, which in the order of their importance are the history, the physical examination and the skin tests. At first it was thought that the skin tests were infallible, that when a patient showed a positive reaction to some substance, that substance was of great clinical importance, and that when the patient did not react the corresponding substance was of no importance. This simple point of view cannot now be maintained, because it is recognized that the skin tests are fallible in two directions. First, positive skin tests can occur with no clinical symptoms to go with them. The point is easy to prove because the discrepancy can be found in many patients. A good example is the patient who has hay fever which does not begin until August, he has no trouble in June, and yet his skin tests to the grass pollens are quite as large as his skin test to ragweed. Obviously, the positive grass tests have no clinical significance. This particular discrepancy between tests and symptoms is a common one. Positive skin tests to animal danders, to wheat and to other allergens, with no evidence of clinical sensitiveness to go with them are also common. The skin tests are fallible in the opposite direction also. Clinical sensitiveness can occur even though the skin tests are entirely negative and by

¹ Pirquet Clemens. *Allergie*. Munchen med. Wchn. chr. 53: 1457 1906.

² Rackemann F. M. *Clinical Allergy Particularly Asthma and Hay Fever*. New York: Macmillan Company 1931.

every method. This discrepancy is not so easy to demonstrate. However, there are a few type cases that seem to prove the point. In one, for example, the asthma cleared entirely when the cat was sent away, but skin tests to cat hair remain negative. A more objective finding is that of Franklin Stevens,³ who found that, if the specific substance was applied to the bronchial mucosa through the bronchoscope, asthma would result even when the same substance caused no reaction by skin test. If these two fallibilities are true, it is quite apparent that the skin tests lose much of their glamour. Results from skin tests must still, as always, be interpreted in terms of the history.

Physical examination is always important. Wheezing is asthma, but the type of asthma, the presence of secondary infections, the presence of focal infections and the presence of other lesions are all to be determined by physical examination, which must never be neglected or overlooked.

It is the history, however, which, from the practical point of view, becomes the chief diagnostic measure. The patient's age, his heredity, his previous medical experiences and his general makeup are all important. His mental capacity and reactions should be noted. Are his statements reliable? Does he probably exaggerate or, on the other hand, does he make light of symptoms which are severe and possibly serious? Are there emotional loads, financial difficulties and the like, which in themselves could aggravate symptoms of any kind and origin, to make a bad matter worse, and thus confuse the primary cause of trouble?

The family history may be important because the tendency to hypersensitiveness—the "allergic state"—is often inherited. "Does any one in your family have hay fever or asthma or skin trouble (eczema) or perhaps migraine?" is a useful question. In 1916 Cooke and VanderVeer⁴ studied two series of families and found that if one parent was allergic 60 per cent of the children showed some manifestation of allergy, whereas if both parents were allergic the figure was higher, at 67.5 per cent. According to the Mendelian law, the figures should be 50 and 75 per cent. If the family history is positive the fact is a little evidence that the patient's symptoms are of allergic origin.

The important part of the history concerns the environment and particularly the changes in environment and whether or not these changes were accompanied by corresponding changes in symptoms. To understand the patient's occupation past and present, its hazards and particularly the dusts connected with it, may lead to the easy discovery of the cause of trouble. The residence is important. Farm houses have dusts from animals, hay, grain fertilizers and insecticides which may be quite different from the dusts of the city. Inside the house, however, the problem becomes even more complex, as will be discussed presently.

But how can the doctor discover which of the many possible sources of trouble is the real one or ones? The 'tricks' that were mentioned in the opening paragraph will help to answer this question. It is the changes in occupation, in residence, in furniture or in other factors, which must be studied carefully.

The first 'trick' is to record dates. Hay fever comes and goes according to the dates on which certain pollens to which the patient is sensitive are in the air. Asthma

that comes in short sharp attacks "twice a year" is better understood when the dates are included and one learns that these dates were October and March "the open season for head colds." A school boy had attacks three times a year, "eleven months ago, seven months ago, and five months ago" a meaningless story until the dates were recorded and it was appreciated that December 21, March 28 and June 12 represented the beginnings of vacation and the change from boarding school to home (where there was a cat!). A woman had asthma "about five times last winter." The first impression was that these attacks came about a month apart, but questions about dates brought out the fact that the five attacks had followed one another in quick succession and that they all occurred in the month of December, at a time when she went on a long visit to her grandmother in New Jersey. Through the rest of the winter she was free. Some time ago a student, taking a routine history, described at great length an attack that occurred "seventeen months ago" and then another attack which occurred 'five months ago.' Whether he himself knew the dates is doubtful. At any rate the poor fellow had made an actual effort to exclude the fact that the difference between seventeen and five was twelve, that the two attacks were exactly a year apart, and that both of them had occurred in the month of September, which, of course, was quite enough in itself to suggest ragweed as a precipitating cause. Subsequently, this was proved to be the case—a diagnosis made on one crucial point—the dates in the history. "On and off" as a careless estimate of the number and frequency of attacks won't do. The lazy questioner will miss the point.

Dates by months are usually accurate, but the patient may know the exact day. 'Seven years ago' becomes only 'five years ago' when the date of the attack is correlated with the known date of a certain operation.

About six months ago" turns out to be not March but May, or at any rate at some time after the grass had begun to turn green. Actually it was only four months ago. As usual, the patient had exaggerated unconsciously. Dates are not hard to remember because they can usually be checked with other circumstances, birth-days, school graduation, the weather, snow on the ground or leaves falling. Changes in residence, child-births, operations and accidents provide further clues to exact dates.

An incidental point about dates refers to the study of old records. To read "fifteen months ago" on a history taken in February 1927 requires some mental arithmetic to find that the event took place in October 1925, and the process involves two possible errors: first, the original calculation of 'fifteen months ago' and second, the subsequent reduction backward to the date. In case, however, dates are used, one can read that the patient was well until October 1925 (with his age of 42 in brackets)" and that 'after this attack he did well until February 1927'—this date to begin a new paragraph, and then perhaps other dates and other new paragraphs, until finally we come to what is the present illness.

Saturday, November 23, 1935, at a football game"—and then shortly after that.

Nov. 25, 1935 (age 52), admitted to the hospital with these complaints.

Such an arrangement is easy to follow and if the dates at the beginning of each paragraph are underlined a 'summary' is provided automatically.

A second 'trick' in history taking is to account for all the time. The young woman's asthma began in

³ Stevens, F. A. A Comparison of Pulmonary and Dermal Sensitivity to Inhaled Substances. *J. Allergy*, 5: 285 (March) 1934.
⁴ Cooke, R. A. and VanderVeer, Albert. Human Sensitization I. *Immunol.* 1: 201 (June) 1916.

October 1925 and was persistent until March 1926, but then came an interval of two years when she had no further asthma. Why was this? The explanation of the free period is often quite as important as is the explanation of the attack itself, and, sure enough, it was found in this instance that the patient was brought up on a farm, went away to work, and was perfectly well while living in the city. Later she married and shortly afterward asthma began again, presumably because of another change in her environment and the consequent exposure to dusts, which were evidently similar to the dusts on the old farm.

Changes in residence, and the effect on the asthma, or the lack of effect, often provide the essential clue. When vacations, business trips or pleasure trips are accompanied by a considerable relief or a disappearance of the asthma, the fact is strong evidence that by going away the patient has been able to escape from a dust that was causing trouble at home. Formal moves to a new residence are of less importance because the cat or dog, as well as most of the furniture, usually move at the same time. Hospital admissions are especially important. Not only does the patient escape from his home, but he lands in an environment in which experience shows that almost all the extrinsic cases become asthma free in a period of five days. The dates of every change in environment—the beginning and also the end of vacations—should be incorporated in their chronological order in the history. "Last August on a five days motor trip, the patient was much improved" and now in the hospital he is again free from asthma. Such a clear cut relationship between asthma and environment revealed by the history throws a strong light on the cause of the trouble.

Changes in occupation may be quite as important as changes in residence. Bakers, cooks, grain dealers, barbers, textile workers and leather workers as well as hostlers, furriers, dog and cat fanciers and those who handle rabbits, guinea-pigs, rats and mice in scientific laboratories may become sensitive to the dusts in their occupational environment. The dates in the history should show when the occupation began and when it was interrupted. Here is a barber sensitive to orris powder and with strongly positive skin tests. The diagnosis appears easy until it is known that he has not worked in the barber shop for six months or more and yet his asthma continues. On the other hand, Peter R. has asthma only when he makes lobster salad in the kitchen of a big hotel.

When the patient has lived always at home with no vacations or travels and no change in occupation, a study of the history is more difficult chiefly because of the absence of history. Under these conditions the asthma has usually been persistent from month to month and week to week. In such a case the diagnosis is difficult unless additional methods of study are employed. These are not concerned with history taking so much as with the care of the patient, but nevertheless they often play an important part in the making of the diagnosis and it is therefore proper to consider them here. The procedures could be called "making history." Their nature will become apparent when the new experiences regarding environment and its various factors are explained.

"Allergic cleanliness" is a significant expression, first used by my associate Dr. Colmes. "Allergic cleanliness" indicates the elimination of those dusts likely to cause trouble in the patient's environment. Any live animal may cause trouble. The removal, however, will

not do good unless it is remembered that animal dusts may remain adherent to sofa pillows, rugs, blankets, riding breeches and similar items. Grandma's cat and its hairs "all over the house" is an excellent example. A college boy had asthma only on the days when his roommate rode horseback. Cotton, kapok and feathers, as the common stuffings of modern furniture, may each or all be exciting causes of asthma. "House dust" becomes interesting from several points of view.

There are several methods of study. First, the patient can be moved away from home for a trial period of observation. Almost every one has relatives or friends who can take him in to live with them for a trial period of a week or two, to see how the change in environment will affect the asthma. Better still, the patient can enter the hospital, where the treatment will consist chiefly of living in the hospital with its linoleum floors, painted walls, sterilized hair mattress, clean bedding, absence of animals and general freedom from household dusts. An analysis of seventy-five extrinsic cases⁵ admitted to the wards of the Massachusetts General Hospital showed that all but two of the patients in this group lost all their symptoms within a period of five days.

Secondly, small samples pulled out from the stuffing of chairs, sofas, mattresses and pillows are often helpful, when their significance is understood.

Cotton may be harmful at times especially if it is dusty and dirty, and full of whole or broken seeds.

Kapok ("silk floss") is poor stuff. Its fibers are small and soft, but soon they become dry and brittle and break down into a fine dust, which escapes through the casing in quantity. The bedding along the mattress edge will be full of it. Kapok pillows lose so much of this dust that they lose weight rapidly and become lumpy. Soggy, flabby kapok pillows can be recognized across the room. They cause asthma often. Kapok that is fresh and new is not harmful, for the fibers are intact. New kapok pillows may bring relief to asthma. Soon, however, in a few months, the disintegration starts. In a recent study, Wagner and I⁶ have found that the alcohol precipitate of a water extract of new kapok contains 0.06 mg. of total solids and little if any nitrogen, whereas a similar precipitate of kapok dust using aliquot quantities contains 0.3 mg. of solids and 0.004 mg. of nitrogen. This finding is quite in line with the previous work of Milton B. Cohen,⁷ who found a similar and marked difference in chemical constitution as well as in skin test activity between new and old cotton linters. The cause of this breakdown in vegetable fibers is of considerable practical importance and is under investigation now.

Fibers of animal origin—hair, wool and silk—are much more resistant and stable. No doubt this is the reason why they seldom cause asthma. Horsehair that has been washed and curled is in my experience, always safe and satisfactory. Patients with horse asthma can sleep on horsehair mattresses without symptoms. Evidently, the washing and curling processes have removed all the dander.

A study of the samples of furniture stuffing may indicate at once which articles should be eliminated and which other articles are probably safe. To find that the pillow or mattress is stuffed with old, broken down kapok may be all that is necessary for diagnosis and treatment. The list of patients relieved by the elimin-

5 Rackemann F. M. Chronic Severe Asthma. A Study of a Group of Cases Requiring Hospital Treatment. J. A. M. A. 99: 202 (July 16) 1932.

6 Wagner H. C. and Rackemann F. M. Kapok. Its Importance in Clinical Allergy. J. Allergy to be published.

7 Cohen M. B. Nelson J. E. and Reinartz B. H. Observations on the Nature of the House Dust Allergen. J. Allergy 6: 517 (Sept.) 1933.

tion of such old kapok from their bedding is already considerable. A doctor came home tired each night. After supper he sat in a certain green plush chair and soon began to wheeze. History showed that in case he was called out again or in case he sat in another room that night he did not wheeze. Samples showed that the chair was stuffed with cotton which was old and dusty. The chair was eliminated and his asthma has been immensely better since then. He is not 'cured' however because he is also sensitive to dogs both by skin tests and by clinical experience and although he has no dog in his own house he meets dogs in other places. He is under treatment with dog hair extract.

The samples can be used in another way. If each is placed in a test tube and then a small quantity of Coca s fluid or other slightly alkaline salt solution is added and stirred for a few minutes, the resulting few drops of crude extract can be used directly for skin tests. A drop taken out with an applicator is placed on the arm and then a small scratch is made through it. Extracts of several different substances should be made and tested at the same time so as to compare them one with another and demonstrate that the skin is not reactive to 'everything'. Often a positive reaction with wheal and erythema will be seen to develop in about fifteen minutes around one of the tests. Such a reaction does not necessarily prove that the corresponding substance was the precise cause of asthma but at least the reaction is reassuring. Proof comes only by showing that the asthma goes when the article is eliminated and comes back when it is returned. Clinical experiments are more reliable than skin tests. 'The proof of the pudding is the eating'.

Thirdly, the practice of visiting the patient's home is always worth while and often essential. Mrs F had asthma of severe persistent type unrelieved by any treatment. On admission to the hospital she became well promptly and at a convalescent home this improvement continued until she fairly 'blossomed'. Back in the old flat, asthma returned the first night. Her flat was visited and it was discovered that she and her husband had five children but only three beds all of them stuffed with cotton or kapok mattresses and pillows. Mr F came home tired and slept in a small side room by himself. Mrs F was in the middle of a large double bed with kapok mattress sitting up most of the night, gasping for breath with a child asleep on each side of her. The other bed was also double size and the three other children slept crossways on it. The situation looked pretty hopeless. However it was arranged that Mr F should take his turn at sleeping with the children so that Mrs F could have the single room. This room was thoroughly cleaned with soap and water, the mattress was discarded entirely and a fairy godmother was glad to provide a new hair mattress. Since then Mrs F has been free from asthma and this in spite of the fact that Mr F has now lost his job and money for food is even less than before. Anxiety and worry among other nervous factors can be excluded so far as the asthma in the case of Mrs F is concerned.

In the case of Joe P. aged 6 a visit to the home showed that the boy with asthma was sleeping on a kapok mattress while sister Mary age 4 had a hair mattress. Since the children have exchanged rooms and mattresses Joe's asthma is greatly improved.

In the case of Mr T the history showed that the trouble at home might well depend on a new parlor set. The onset had coincided tolerably well with the

purchase of a new sofa and the two chairs and in the hospital Mr T had become free from asthma promptly. The new sofa and the two overstuffed chairs were therefore put in an upper room and the door was kept closed. Since then Mr T has had no more asthma. He has gained 40 pounds (18 Kg) and has gone back to his job. The clue to his successful treatment was in recognizing the close relation between his asthma and his environment. It paid to make history by sending him to the hospital as a test of possible dust factors at home.

ECZEMA

The suggestions that have been given apply to asthma and they apply to eczema as well particularly to that type of eczema called atopic dermatitis which is often associated with asthma or hay fever in the same individual which goes with a positive family history of allergy and which often has positive skin tests of the immediate type. The distribution of the lesions to face and neck and to the antecubital and popliteal spaces is very characteristic of this type of eczema. The condition is common. The exciting cause reaches the skin through the blood stream 'from underneath' in contrast to the group of contact dermatitis in which the cause reaches the skin directly from on top.

Foods cause atopic dermatitis but dusts also can cause it and therefore like asthma this type of eczema may vary with the environment. Eczema often clears in a hospital. A college student developed eczema in October 1934 which was bad enough to drive him home in November. At home he had treatment with x-rays and his skin cleared. In January back at college—more eczema—home again—more x-rays and recovery again until he returned to college. In June more x-rays and with greater success because he was free all summer. October however eczema came again. Every one was interested in the roentgen treatment no one was interested in the simple fact that in college he had eczema and out of college there was no eczema. Soon it was found that he had a couch or day bed and several pillows all of doubtful origin that he also wore a certain coat in college and not elsewhere. These things have now been eliminated and the eczema is very much improved. Roentgen treatment is quite unnecessary. When first seen by his doctor there was not enough history to make a proper diagnosis. Now of course it is easy to look back a year and see how unfortunate it was that when he first went home more time was not given for the change in environment to assert itself—more time for more history. Subsequent events have demonstrated that success in the diagnosis and the treatment of his eczema depended on nothing more complex than his clinical history.

The methods of Sherlock Holmes are needed in eczema as in asthma and they begin with the history and its dates.

SUMMARY

1 The clinical history is of primary importance in the diagnosis and treatment of the allergic diseases.

2 Dates in the history are not only the accurate expression of time but are essential to the successful study of hay fever of asthma and of eczema.

3 To account for all the time is to learn in many cases not only why the attack began but why it ended and then later why the free period in turn ended.

4 When the history is not long, or contains only a few events further history can be made.

5 In atopic dermatitis (eczema) the history may be quite as important as it is in asthma.

RUPTURE OF THE KIDNEY FOLLOWING PYELOGRAPHY

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Rupture of the kidney following external violence, spontaneous rupture of a pathologic kidney and rupture of the ureter after instrumentation have been frequently described in the literature, but there is a paucity of reports on postpyelographic rupture.

It is indeed amazing that with the morbidity produced in the early pyelographic days more cases were not reported. It is possible that the condition was undiagnosed, or perhaps there was a hesitancy on the part of the cystoscopist to report such unfortunate occurrences.

Hunner¹ reported twenty-one ruptured ureters in 2 000 catheterizations. Henline² described several cases of rupture of the ureter following instrumentation (ureteral catheter, bougie and other procedures). He

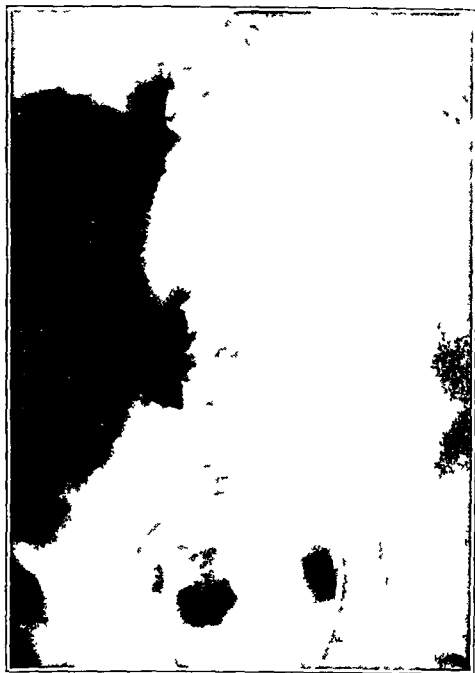


Fig 1 (case 1)—Extensive extravasation following pyelography

brought out the interesting fact that perforation of the normal ureter is difficult, in all his cases the ureter was diseased or associated with a pathologic condition such as calculus.

Similar cases were reported by Sargent,³ Noble⁴ and Geisinger.⁵ Most of these cases of perforation of the ureter followed instrumentation and not overdistention with ureterographic mediums.

Pyelographic reactions for many years were so frequent that a cystoscopy and pyelography were considered a hospital procedure. Keyes and Mohan⁶ in 1915 described the pathologic changes produced in kidneys by the then popular but extremely irritating mediums.

PYELOVENOUS BACKFLOW

With the discovery by Lee-Brown,⁷ Hinman,⁸ Fuchs⁹ and others¹⁰ of pyelovenous backflow, considerable light has been thrown on the subject. Studies were made on intrapelvic pressure and the hydromechanics of the pyelovenous phenomenon to the extent that today pyelographic accidents occur much less frequently. If proper precautions are taken, such accidents should even be rare.

Solutions such as collargol, thorium nitrate, and even the supposedly innocuous sodium iodide of recent years, have been almost entirely discarded. Pyelographic reactions following the use of these solutions have varied from a mild rise of temperature to severe fulminating sepsis, at times necessitating nephrectomy, even in the best of hands.

With the advent of skiodan, hippuran and similar organically bound iodine products used intravenously, these solutions have been put to use for retrograde pyelography with absence of toxicity and without reaction. Bilateral pyelograms with these solutions have been repeatedly used without ill effects, there is comparatively complete absence of pain.

The practical application of a knowledge of pyelovenous backflow lies in the following: Overdistention of the pelvis by pyelographic mediums will cause intrarenal extravasation, throwing into the venous circulation not only the medium but also pus, blood and micro-organisms in infected cases. Hence the rise of temperature occasionally following pyelography, hence the occasional fulminating illness, sepsis and death.

In spite of the comparative safety of the newer solutions, rupture of the kidney is a complication fraught with danger.

PREVENTION OF RUPTURE

The normal capacity of the renal pelvis is from 4 to 6 cc. An increase over this amount denotes pyelectasis, and injection of the pyelographic medium must proceed with caution. If a manometer is used, pressure should not exceed 30 mm of mercury. If not, observation of the patient's symptoms should be carefully noted. At the first sign of an ache in the renal area, the flow must be interrupted. To determine the capacity of the pelvis aspiration should be a routine procedure. The operator can then, with a fair degree of accuracy, determine the maximum quantity of fluid to be injected.

It is particularly necessary to use caution in badly infected kidneys. Just as in perforation of the ureter, the diseased kidney is more prone to rupture. The mucosa of the pelvis and the walls of the venules and collecting tubules, in the presence of infection, have undergone anatomic changes, making rupture more than a possibility. Pyelography in the presence of an acute or subacute infection should be avoided if possible, and the kidneys visualized by the excretory method.

SIGNS AND SYMPTOMS OF RUPTURE

Pain is a constant symptom, this may be localized or general. Nausea, vomiting, fever, chills and elevation of the pulse are commonly observed. There may be a diminished output of urine with the appearance of a mass in the renal area. Rigidity or abdominal disten-

1 Hunner G L cited by Henline
2 Henline R B Traumatic Injuries of the Upper Urinary Tract Following Instrumentation J A M A 102 182 188 (Jan 20) 1934
3 Sargent J C I Urol 24 513 515 (Nov.) 1930
4 Noble C P Am Med 4 501 (Sept.) 1902
5 Geisinger J F Extravasation from the Ureter Ann Surg 93 554 550 (Feb.) 1901
6 Keyes E L Jr and Mohan Herbert The Damage Done by Pyelography Am J M Sc 119 30 45 1915

7 Lee Brown R K and Hinman Frank Pyelovenous Backflow J A M A 82 607 (Feb 23) 1924
8 Hinman Frank Pyelovenous Backflow at the Time of Pyelography Surg Gynec & Obst 44 592 600 (May) 1927
9 Fuchs Felix Pyelovenous Backflow in the Human Kidney J Urol 23 181 (Feb.) 1930
10 Scott Douglas The Effects of Pressure of Pyelographic Media J Urol 30 39 47 (July) 1933 Hullsiek R Pyelovenous Backflow at the Time of Pyelography ibid 25 435 (April) 1931 Shapiro I J and Veseen L L Untoward Results in Bilateral Pyelography ibid 24 621 635 (Dec.) 1930

tion are later signs. Tenderness over the kidney is always present. All symptoms and signs will vary with the extent of the rupture.

The diagnosis is easily made on examination of the pyelogram. The extravasation may be extensive or localized to a small area perinephrically.

TREATMENT

When the tear is small and resultant leakage is moderate the amount of extravasation is slight, the tissue reaction is prompt and the tear heals quickly. Symptomatology will accordingly be less severe, and there is less danger of a perinephric complication.

Should the clinical course show no improvement, or should there be a steady increase in signs and symptoms, surgery is indicated for incision and drainage of the perinephric collection.

When the rupture is severe and there is extensive extravasation, the condition calls for immediate surgery. Depending on the condition of the patient and on the pathologic changes discovered, the procedure will vary.

The left catheter was kept in situ and a left pyelogram was done, 35 cc of skiodan being used. It showed a marked enlargement of the left kidney. The contours were not very clearly demonstrated, however. There was a large opaque calculus in the upper pole of the left kidney about 1¼ inches (3.2 cm) in diameter. The pelvis and calices were incompletely filled and were very distorted. These changes were the result of a large calculus in the left kidney with associated hydronephrosis.

The urea nitrogen was 160 mg per hundred cubic centimeters, creatinine 176, and sugar 355. The urine was negative for sugar but showed many pus cells. Urine from the left kidney yielded pus and *Staphylococcus albus*, from the right kidney an occasional white blood cell.

The left kidney catheter remained in situ for two days and drained well. Then it slipped out of position. The patient still appeared to be too ill for surgery, such as a contemplated left nephrostomy. Cystoscopy was repeated and the indwelling left ureteral catheter was reinserted. At this time it was noted that there was a fair return of indigo carmine from the right side in twenty minutes but none from the left.

The left pyelogram was now repeated, 75 cc of skiodan being used.



Fig. 2 (case 2)—Appearance before pyelography.



Fig. 3 (case 2)—Appearance of normal pyelogram.



Fig. 4 (case 2)—Extravasation through the superior calyx following pyelography.

Adequate drainage alone, nephrostomy or nephrectomy must be considered.

REPORT OF CASES

The following three reports of rupture are illustrative.

CASE 1—Mrs. Mary O., aged 63, admitted to the Kings County Hospital May 4, 1934, in the department of genitourinary surgery in the service of Dr. F. L. Senger, had fallen on her abdomen four months before while carrying a heavy weight and had had abdominal pain since. One week before admission this became severe, necessitating hospitalization. Pain was particularly severe in the left lower quadrant and left lumbar region. There was no vomiting and no urinary symptoms were present.

On examination the patient was acutely ill with a temperature of 102 F and a white blood cell count of 32,000 with 85 per cent polymorphonuclear leukocytes. The abdomen showed a mass extending from the left upper quadrant to the iliac crest, moderately tender and apparently renal. There was exquisite left costovertebral tenderness.

Cystoscopy revealed a hazy bladder, urine and a moderate generalized cystitis. The indigo carmine test intravenously showed no dye from either side after fifteen minutes. Bilateral catheterization showed no definite obstruction on either side. From the right, clear urine was obtained; from the left, toothpaste pus.

That night the patient became weak and listless. The pulse was only fair. Drainage from the catheter was scant and bloody.

The pyelogram revealed that after injection of the fluid a large amount was noted above and slightly below the iliac crest. A large part was in markedly dilated calices and a considerable amount appeared to be extrarenal. There was marked dilatation of the ureter, which ended abruptly at the lower sacroiliac level (fig. 1).

Operation was performed immediately. A lumbar incision was made in the usual manner; a stab wound was made in the large renal mass, yielding 500 cc of foul-smelling, bloody and purulent fluid. A nephrostomy tube was rapidly inserted. The patient's condition was precarious and no attempt was made to explore or manipulate further. Death followed shortly afterward.

At autopsy the following changes were related to the left kidney. A large amount of dirty green fluid with a foul odor was removed from within, around the kidney toward the external surface was seen an area of old hemorrhage which adhered to what was left of the renal capsule. The entire perinephric structure appeared to be necrotic and little architecture of the kidney remained. There was foul-smelling pus in the pelvis. A stone the size of a walnut was found in the pelvis. There was necrosis of the entire parenchyma. The ureter was not identified, owing to the great distortion caused by the necrotic process.

The right kidney showed cloudy swelling. There was early bronchopneumonia of the right lower lobe and a septic spleen. The cause of death was perinephric abscess, sepsis and bronchopneumonia.

This was a case of calculus in a tremendous pyonephrotic sac. Visualization by a retrograde pyelogram with 35 cc of skiodin failed to fill the kidney but was definitely sufficient to establish the diagnosis. Further pyelography was contraindicated and the amount injected was entirely excessive.



Fig 5 (case 3)—Intravenous pyelogram showing evidence of right renal infection.

In May 1935 an appendectomy had been performed at the Knickerbocker Hospital but the symptoms recurred. The menses were irregular and painful.

Physical examination revealed moderate tenderness in both upper quadrants. No masses were palpable. There was slight tenderness in both costovertebral angles. There was moderate right abdominal tenderness but no spasticity. Rectal examination was negative. The temperature was normal, the blood chemistry was negative and the blood count was normal.

The bladder was normal, with normal function on each side with no obstruction to either kidney. August 6 the urine was normal. Roentgenograms and bilateral pyelograms were negative (figs 2 and 3).

The diagnosis at this time was Negative urologically. Psychoneurosis.

Following cystoscopic study there was a reactionary rise in temperature to 104 F which did not subside for eleven days. Associated therewith the patient had persistent generalized abdominal pains, particularly on the right with occasional chill. There was tenderness present in the right costovertebral angle.

The Wassermann reaction was negative and a roentgenogram of the chest was negative.

A small shadow of the gallbladder was seen after administration of the dye indicating abnormal physiology of the biliary system with or without stones.

The barium sulfate enema study was negative.

Urinalysis was done August 12. Albumin was 3 plus and there were from 25 to 30 white blood cells per high power field. Examination of the blood showed 3,850,000 red blood cells with hemoglobin 67 per cent. White blood cells at this time numbered 18,600 with 86 per cent polymorphonuclear leukocytes.

September 2 the temperature was still low grade. The impression was that there was a pathologic condition of the gallbladder and the patient was accepted by the surgical service. September 6 there was no clinical evidence of a disorder of the gallbladder and on the 11th the pain localized to the right flank near the costovertebral angle without radiation. There was no pain in the right upper quadrant. The patient was referred back to the urology service.

September 12 cystoscopy was repeated. There was turbid urine from the right kidney and clear urine from the left.

The kidney functions were good. A number 7 catheter was left in the right kidney following right pyelography.

It was now thought that the condition was right pyelonephritis (subsiding).

The pyelogram revealed a pyelovenous backflow with enlargement and marked irregularity of the superior calyx, suggesting extravasation or abscess. The left side was normal (fig 4).

The evening of the cystoscopy the patient became extremely ill. The temperature was 103 F. On September 16 the condition was worse with chills, high fever, severe tenderness over the kidney and apparent sepsis.

At operation, September 17 the right kidney was adherent to the deep fascia and was not delivered. There was a definite abscess enveloping the upper pole incision into which yielded a large amount of yellow green pus. The abscess communicated with the upper calyx. Ample drainage was established.

The patient made an uneventful recovery. The temperature subsided in from four to five days.

This case is illustrative of the evident dangers of pyelography, in the presence of acute or subacute renal infection. The diagnosis was definitely established of a subacute right pyelonephritis. Visualization, if essential, could have been accomplished by the intravenous route.

CASE 3—E. C., a man aged 32, admitted to the Jewish Hospital in the urologic service of Dr. Paul Aschner, Feb. 18, 1935, complained of pain over the right lumbar region of two weeks duration, blood and pus in the urine, and fever. Five years before he had had right renal colic and, following a cystoscopy, voided a small stone.

The Murphy sign was positive on the right side of the abdomen with moderate tenderness in the right upper quadrant.

The temperature was from 102 to 104 F with an associated rise in the white count. Blood chemistry and the Wassermann reaction were negative.

Cystoscopy, February 19, showed a congested and edematous right ureter orifice (which may have been the result of a recent cystoscopy performed before admission). The indigo carmine test was normal on the left but there was no return from the right in fifteen minutes. A number 6 catheter easily passed obstructions at 2 and at 25 cm up the right ureter. There was a gush of purulent urine from the right pelvis with a steady hydro-nephrotic drip. The catheter was left in situ and the temperature dropped to normal in two days.

On February 21 a roentgenogram and retrograde pyelogram were done. 20 cc of skiodin being used. No shadows suggestive of calculus were seen. The right renal pelvis was considerably dilated; there was an irregularity or fuzziness of the calices suggestive of intrarenal extravasation or tuberculosis.



Fig 6 (case 3)—Extravasation at uretero-pelvic junction following pyelography.

Following this, the temperature rose again to 102 F, the catheter failed to drain properly and a second cystoscopy was done to reinsert the right ureteral catheter, February 27. The temperature then declined to normal and the catheter was removed March 3.

March 9 an intravenous pyelogram revealed a normal left kidney. On the right there was a marked hydronephrosis with blunted calices. The irregularity was somewhat bizarre in appearance, possibly because of inspissated pus (fig 5).

The urine was negative for tubercle bacilli on several examinations. The right kidney urine showed *Staphylococcus albus*. The phenolsulfonphthalein test, February 25, returned 39 per cent.

On March 12 the temperature was normal and the patient felt well.

A cystoscopy and retrograde right pyelography was performed at this time, 40 cc of skiodin being used. This study revealed (1) hydronephrosis and (2) a rather large dense shadow slightly inferior to the right renal pelvis, which was suggestive of a small sinus tract or cavity filled with the dye which may have been due to perforation of the kidney or renal pelvis (fig. 6).

For three days following this there was a rise of temperature to 101 F and thereafter a low grade temperature daily.

The diagnosis was infected right hydronephrosis with right pelvic extravasation.

Accordingly operation was performed on March 16. The kidney was found to be twice normal size. There was a marked perinephritis with marked inflammation and edema of the periureteral and peripelvic tissues, incision into which yielded about 1 ounce (30 cc) of pus. The upper ureter was exposed and incised about 5 cm below the ureteropelvic junction. A number 8 ureteral catheter was passed into the pelvis through this incision and fastened in situ. The kidney was decapsulated, revealing a few small cortical abscesses. Ample drainage was provided.

April 3 the patient felt well and was out of bed with a normal temperature. A cystoscopy showed a fair indigo carmine return from the affected kidney and the hydronephrotic drip was less marked (15 cc being obtained on aspiration). The phenolsulfonphthalein test, April 7 was 52 per cent.

The patient was discharged April 7 and was to receive further dilutions and pelvic lavage on the outside.

This case pertinently reveals the extreme danger of pyelography in the presence of a subsiding pelvic infection.

SUMMARY

- 1 The capacity of the renal pelvis must not be exceeded in pyelographic injection.
 - 2 Aspiration of the pelvis should be a routine procedure to determine the capacity.
 - 3 To perform pyelography on badly infected kidneys is a dangerous procedure.
 - 4 Whenever possible in the presence of infection acute or subacute, the pelvis should be visualized by the excretory route.
 - 5 If the retrograde method is essential great care must be used. If there is no apparent pain or discomfort after from 15 to 20 cc the operator should cease and visualize the pyelogram before attempting an injection of a larger quantity of the medium.
 - 6 Surgery is usually indicated when the urography shows extensive extravasation.
 - 7 In three cases ruptured kidney followed the indiscreet use of the pyelogram.
- 25 Eastern Parkway

THE ANTERIOR PITUITARY-LIKE HORMONE

A CLINICAL STUDY OF ITS EFFECTS IN
ACNE VULGARIS

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In a previous paper¹ a preliminary report concerning the effect of pregnancy urine extract on acne vulgaris was made. This paper comprises a further study of that problem.

A review of the literature brings to light several theories regarding the cause of acne but little clinical or experimental evidence in support of them. Constipation, improper diet, lack of exercise and the normal aversion of youth to soap and water are all mentioned in the older textbooks² as probable causes of the condition, but no convincing evidence of their responsibility



Fig. 1—Biopsy specimen of skin from patient A. S. before treatment under low power. There is marked hyperplasia of the epidermis at A. Higher magnification shows many mitotic figures in that area.

for it is to be found. Later the microbacillus of Sabouraud was regarded as the specific etiologic factor in the disease until evidence accumulated that 'it may be found in myriads in the sebaceous material expressed from the follicles of the nose of practically all adolescents and adults'.³ Schramberg⁴ suggests that it may be merely a saprophyte under ordinary conditions and becomes noxious only in a soil prepared by other factors, and he points out that *staphylococcus* is present in all acne pustules yet is certainly not the cause of acne.

From the Medical Department, New England Medical Center.
Read before the American Clinical and Climatological Association, Oct. 21, 1935.

The author is indebted to Dr. Rudolf O. Good for his help and opinion in the study of the biopsy specimens.
1. Lawrence C. H. and Eigenbaum Jacob: The Treatment of Acne Vulgaris with Pregnancy Urine Extract. A Preliminary Report. New England J. Med. 212: 1215 (June 27, 1935).
2. Antitrin S. was used in these studies.
3. Stellwagon H. W.: Diseases of the Skin, ed. 4. Philadelphia W. B. Saunders Company, 1906.
4. Grimsby O. S.: Infectious Diseases of the Skin, ed. 4. Philadelphia Lea & Febiger, 1926.
5. Schramberg J. L.: Research Problems in Dermatology. Arch. Dermat. & Syph. 4: 293 (Sept.) 1921.

The Time Food Remains in Stomach—The length of time spent by food in the stomach depends in part upon the proportions of carbohydrate, protein and fat eaten. In experiments where each is eaten separately, protein food stays longer in the stomach than carbohydrate, fat longer than protein and mixtures of fat and protein longest of all. In a mixed diet then the greater the proportion of fat the longer the food stays in the stomach. This action of fat may be either disadvantageous or advantageous according to circumstances. Excessive fat may retard digestion unduly and lead to discomfort on the other hand too little fat may result in such early emptying of the stomach that hunger pangs are felt too shortly after the meal is eaten.—Sherman H. C. Food and Health. New York: Macmillan Company, 1934.

Certain changes in the skin of acne patients, which may "prepare the soil" or may constitute the entire pathologic condition, were, I believe first described by Unna⁵ in 1896. The earliest change noted by him consists of 'a superficial hyperkeratosis of the epidermis which, extending into the follicle mouths leads to the formation of comedones. In this stage the horny and granular layers become thickened. At the mouths of



Fig 2—Biopsy specimen of skin of patient F. A, before treatment under low power showing hyperkeratosis of epidermis near mouth of sebaceous duct (A) and keratinized epidermis at B and C blocking the lumen. Normal gland tissue at D.

the follicles there is always found, instead of a filter-like depression a slight or marked elevation, formed of horny lamellae which is caused by pressure from beneath, of the horny plug." These are the comedones which are the product of a hyperkeratosis extending from the general surface to the mouths of the follicles and contain in addition to horny substance, normal sebum. They are consequently in no way the result of an abnormal secretion of sebum.

'There must be in acne,' says Unna, "some permanent irritant of the follicles, acting more or less deeply in the cutis, which induces a chronic hyperplastic inflammation." The epithelium participates he believes in the general hyperplasia. He also calls attention to the characteristic limitation of acne to the period of puberty.

Little interest was apparent in this obvious chronological relation until 1921, when Hollander⁶ advanced the theory that acne is caused by an endocrine imbalance brought about by the demands of puberty. This imbalance was, according to him, one of thyroid activity secondary to gonad activity.

In the same year Schamberg⁴ wrote "General experience will support the statement that practically all young female patients with acne exhibit a menstrual exacerbation of the eruption. When the phenomena of the menstrual acne relapse is considered in conjunction with the initial onset of acne at the approach of puberty the inference appears to be justified that an internal secretion of the sex glands or some other endocrine structure energized by the gonads is an etiologic factor of importance."

Other investigators (Pick,⁷ Bloch,⁸ Mumford,⁹ Van Studdiford¹⁰) have added confirmatory evidence to the support of the idea that the fundamental cause of acne is to be found in an endocrine imbalance incident to puberty.

Pick calls attention to the Bavarian colloquial term for acne lesions "chastity pimples" and states his belief that acne is connected with the function of the 'puberty glands'.

Bloch⁸ in a careful study of more than 4,000 girls and boys between the ages of 6 and 19, found some degree of acne in 59.6 per cent of the former and in 68.5 per cent of the latter. The severe grades were encountered in 8 per cent of the girls and in 20 per cent of the boys. He states that the process in the body which is responsible for the occurrence of menstruation and of the growth of pubic and axillary hair likewise determines the appearance of acne. "This process," he says "is the function of the gonads, and in this sense acne is to be considered as a hormonal skin disease."

Mumford⁹ calls attention to the fact that in a series of 100 female patients menstrual irregularity occurred or had occurred at the onset of the acne in 40 per cent a finding which he regards as evidence that the eruption is a symptom of endocrine imbalance.

In our earlier paper, Feigenbaum and I¹ reported the results of treatment of fifteen patients with acne by injections of antuitin-S. The present paper comprises a study of thirty patients by the same method and a discussion of the results obtained.

So far as they parallel those of authors already cited, our observations are in essential agreement with them and a detailed comparison seems unnecessary.

Three fourths of the patients were between 10 and 20 years of age, and in the remaining fourth the acne had appeared during adolescence in all but two, in both of whom it was preceded by changes in the rhythm and character of the catamenia. The onset of the eruption

6 Hollander, Lester. The Role of the Endocrine Glands in the Etiology and Treatment of Acne. Preliminary Report. Arch. Dermat. & Syph. 3: 593 (May) 1921.

7 Pick, R. Acne und innere Sekretion. Arch. f. Dermat. u. Syph. 131: 350 (1921).

8 Bloch, Bruno. Metabolism, Endocrine Glands and Skin Diseases with Special Reference to Acne Vulgaris and Xanthoma. Brit. J. Dermat. & Syph. 43: 61 (Feb.) 1931.

9 Mumford, R. B. Acne Vulgaris a Symptom Not a Disease. Brit. M. J. 1: 141 (Jan. 28) 1933.

10 Van Studdiford, M. T. Effect of the Hormones of the Sex Glands on Acne. Arch. Dermat. & Syph. 31: 333 (March) 1935.

5 Unna, P. J. The Histopathology of Diseases of the Skin (translated by Norman Walker). New York: Macmillan Company, 1896.

was between the twelfth and fourteenth year in more than two thirds of the patients and in only one did it appear as early as the tenth year. Its severity was rated as mild in five patients, moderate in thirteen and severe in twelve. The eruption was confined to the face in fifteen cases, to the face and neck in two, and in thirteen was distributed over the face, neck, chest and back.

Ten of our patients were males, twenty were females. In the latter group a definite history of an exacerbation

significance was underweight of more than 10 pounds (4.5 Kg.) in nine patients—about one third of the group.

Studies of the urine, blood, and basal metabolic rate were made as a routine. The urine showed no significant departure from normal in any case. The Hinton test was uniformly negative. Mild hypochromic anemia was found in four patients, the only departure from a normal blood picture. Blood cholesterol was normal in sixteen of twenty patients, and slightly increased in four. The basal metabolic rate was normal in eighteen patients, between minus 10 and minus 20 in four, minus 29 in one, and between plus 10 and plus 20 in five. In the latter group the increase in metabolism was not accompanied by any other signs of thyroid hyperactivity and was thought to be due to emotional factors. The patients with depressed rates showed no physical or laboratory signs of thyroid deficiency. The fasting blood sugar was normal in every patient. Dextrose tolerance tests were performed on twenty-five patients. Fifteen showed the so-called flat curve indicating increased tolerance, in five the curves were indicative of a moderate depression of tolerance, and in five they indicated normal tolerance. Material for histopathologic study has been obtained from eight patients by biopsy and submitted to Dr. Osgood in our tissue laboratory. The results agree with those of Unna² in indicating that the characteristic change in the skin is a superficial hyperkeratosis of the epidermis which blocks the follicle mouths and which represents a chronic hyperplastic process in which the epithelium shades in moderate degree.

Treatment consisted, as in our earlier series of injections of 2 cc of antuitrin-S every other day.



Fig 3—Biopsy specimen of skin of patient F. A, before treatment under low power showing keratinization (A), hyperplasia of epithelium (B) and dilatation of the gland.

of the eruption at the menstrual period was obtained in eight patients, eleven had never noted any such relation, and one stated positively that it did not exist.

The menstrual periods were normal in only six of the twenty females, the remainder having disturbances of rhythm, duration or amount of flow, or definite dysmenorrhea. Oligomenorrhea was encountered more frequently than any other type of disturbance (present in eleven patients) but four patients had severe menorrhagia.

Genital development as observed in the males, was normal in nine patients. One showed definite genital hypoplasia. Satisfactory pelvic examinations in young girls are difficult to obtain, and definite criteria of normal development during adolescence are lacking so that our data concerning genital hypoplasia are meager. Three adolescent females showed in the opinion of the examiner definite genital hypoplasia, and the incidence of oligomenorrhea would suggest its presence in a considerably larger number.

No organic visceral disease was found in any patient in our series. The only physical finding of possible



Fig 4—Patient A, before treatment showing acne of face, absence of axillary and pubic hair, prepubertal breasts, and body configuration.

injections were omitted during the menstrual periods of the female patients, though in no instance has there been noted any effect on normal menstruation, despite the well known influence of the preparation in disturbances of that function. This lack of effect in normal women has also been observed by Murphy, Shoemaker and Rea.¹¹ In the patients in whom there was coexisting

¹¹ Murphy, D. P., Shoemaker, Rosemary, and Rea, Marion. Menstrual Response to Iuteinizing Extract of Pregnancy Urine. *Endocrinology* 18: 203 (March-April) 1934.

menstrual disturbance, improvement in both acne and menstruation progressed in equal measure, indicating a general effect on bodily economy rather than one localized in the skin. This generalized effect is well shown in patient A. K., a girl 15 years and 6 months old when treatment was begun. In addition to a well marked facial acne she showed definite retardation of

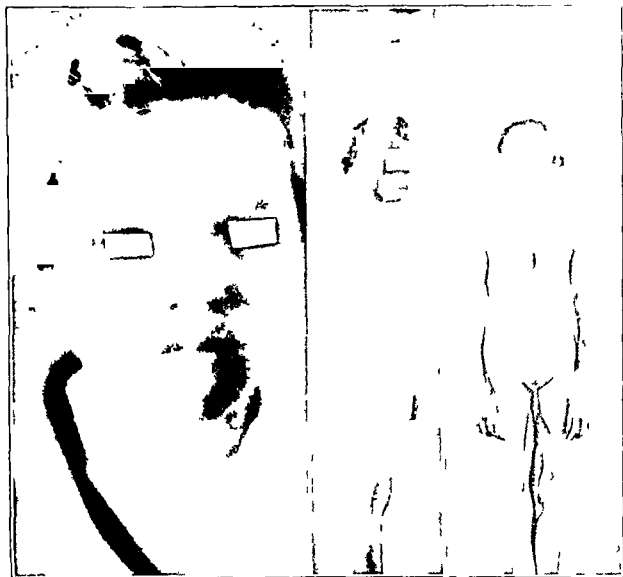


Fig 5—Patient A. K. after four months treatment showing decrease in acne lesions, development of breasts and beginning growth of pubic and axillary hair.

physical, mental and sexual characteristics. She had never menstruated, the breasts were prepubertal, and there was no body hair. After thirty days' treatment with antuitrin-S her acne was much improved. After six weeks' treatment there was definite growth of the breasts and a slight growth of pubic and axillary hair. Eight weeks after treatment was begun the acne was



Fig 6—Patient I. V. showing acne of face before treatment. Note in addition to papules and small pustules the general pebbly appearance of the skin.

greatly diminished the breasts showed further increase in growth and she had her first menstrual period.

The duration and amount of treatment necessary to produce results varied greatly in different patients. The factors which determined this variation were apparently the age of the patient and the severity of the disease, but even in patients of identical age and equally severe eruptions a rather wide variation of

response occurred. The average dosage in the series has been 3,360 rat units, the maximum 7,700 rat units in a patient 15 years of age with severe general acne and the minimum 300 rat units, in a patient 30 years of age with a mild eruption confined to the face and neck. No explanation of this variation is yet apparent, though the indications are that it depends on the gravity of the underlying imbalance rather than on its outward manifestation. In the majority of patients, improvement has been apparent in from two to four weeks, and maximum benefit has been obtained in from twelve to sixteen weeks. Two patients have shown slight relapses beginning four and six weeks after treatment was stopped and responding promptly to the resumption of treatment. No difference is apparent between the two sexes as regards response to treatment.

Ten patients are regarded as cured, since their acne has not reappeared after two months without treatment. Eleven are much improved, showing at present only an occasional papule, and seven show only moderate improvement, owing partly to as yet insufficient treat-



Fig 7—Patient I. V. after eight weeks treatment. Marked improvement in acne and loss of pebbly appearance of skin.

ment and partly to slow response. One patient has moved away and one has just begun treatment and was included in the series because of significant features in her case.

COMMENT

The evidence connecting acne with the profound changes in hormonal balance that take place during adolescence is so obvious that it has been overlooked until recently, and even now our knowledge of those changes is too fragmentary to permit identification of the exact endocrine dysfunction which causes that disease. Certain observations, however, can be assembled which narrow the field. The normal basal metabolic rates in 64 per cent of our series of patients with the additional finding of normal blood cholesterol values in 80 per cent of the patients tested seems sufficient evidence to eliminate disturbance of thyroid function as a factor. There is no evidence sufficient to indict the parathyroids and contrary evidence is offered by our finding normal blood calcium values in six patients. There is likewise no evidence of adrenal disturbance and the natural history of acne is inconsistent with present conceptions of adrenal function. The normal

fasting blood sugar values in our patients eliminate a pancreatic disturbance as a probability and leaves for more careful consideration the gonads and the pituitary as possible foci.

Certainly it is the secretions of these two glands which motivate the bodily changes which are defined as puberty and adolescence. Moreover, the work of



Fig 8—Patient J. M. showing acne of chest with marked scarring before treatment.

Evans and his associates,¹² and of Smith,¹³ Engle,¹⁴ and Hertz and Hisaw,¹⁵ has shown that such changes do not occur in the absence of adequate activity of the anterior lobe of the pituitary and that normal gonadal function is dependent on it. Houssay¹⁶ has also shown that that organ is intimately connected with carbohydrate metabolism. The evidence obtained from our studies, which brings to light a considerable association of acne with physical or sexual retardation and disturbances of menstrual function and of carbohydrate metabolism, furnishes a considerable indication that a hypofunctional disturbance of the anterior pituitary lobe is a factor of importance in the causation of acne. Finally, the response to treatment with a substance that is at least an anterior pituitary-like hormone offers confirmatory evidence of considerable weight. Such a hypothesis would predicate retarded gonadal development in acne patients, and the fact that sexual hypoplasia could be demonstrated by physical examination in only a small number of our patients is not proof that normal physiologic activity was present in the remainder. The work of Rosenthal and Kurzrok,¹⁷

indicates that in female acne patients at least, normal gonadal activity is the exception rather than the rule. They determined quantitatively both the gonadotropic and estrogenic content of the urine of thirty-four young women with acne. The patients' ages ranged between 11 and 33 years, twenty-one being under 20 years old. No gonadotropic substance was found by Zondek's method. Using Kurzrok and Ratner's method for the determination of the estrus-inducing hormone, they found it in normal amounts in only six cases present in traces in one case and completely absent in twenty-seven cases. These results indicate that, irrespective of the physical observations, a gonadal hypofunction, primary or secondary, does coexist at least in females, with acne. Primary ovarian hypofunction is uncommon before 20 so that it seems probable that the demonstrated hypofunction is secondary to a lack of the gonad-stimulating hormone of the pituitary. Again the normalization of the menstrual function in our acne patients treated with antuitrin-S lends weight to this supposition.

Treatment of a similar series of patients with anterior pituitary gonadotropic hormone should confirm or refute the theory that dysfunction of the anterior pituitary lobe is the basis of the hormonal imbalance that causes acne, while periodic hormone assays checked by endometrial and skin biopsies should furnish evidence adequate for the final solution of the problem of the role played by the gonads. Such studies are now being undertaken in our clinic.

CONCLUSIONS

Abundant evidence exists in the literature indicating that an endocrine imbalance incident to adolescence is

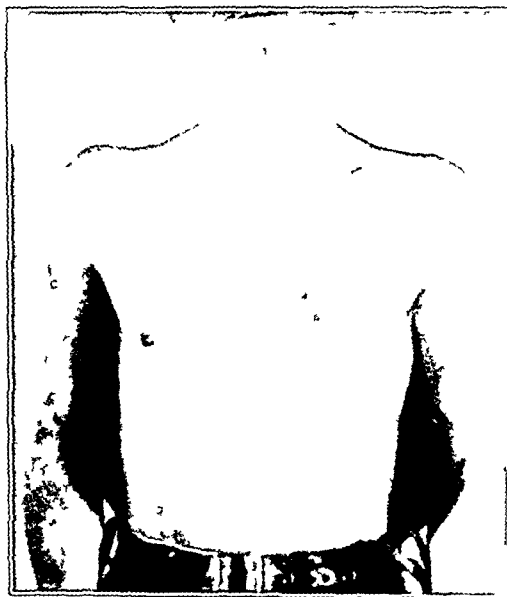


Fig 9—Patient J. M. showing condition of chest after five months treatment.

the major, if not the sole etiologic factor in acne vulgaris.

From studies made in our clinic, it seems highly probable that this imbalance involves the anterior pituitary gonadal mechanism.

Further study is needed to determine the exact nature of the imbalance.

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MULTIPLE MYELOMAS WITH TUMOR-LIKE AMYLOIDOSIS

A CLINICAL AND PATHOLOGIC STUDY

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The association of amyloidosis with multiple myelomas has been noted with increasing frequency in recent years, having first been reported by Askanazy¹ in 1903. Magnus-Levy² in 1933 summarized the literature on the subject and collected thirty-five cases of amyloidosis complicating multiple myelomas, to which he added two more cases recently reported by Chester³ and by Rosenblatt.⁴ These were collected from 150 carefully studied cases of myeloma, or an incidence of about 25 per cent. Of these, localized masses of amyloid simulating tumors were found in ten cases. Since his article, two additional cases have been reported by Rosenheim and Wright⁵ and by Randall.⁶ In the former, generalized amyloid deposits were found in



Fig. 1—Discrete areas of destruction throughout both tables of the skull

the bone marrow, liver and spleen, and in the latter the amyloid formed a tumor mass in the wall of the intestine causing an intestinal obstruction. Geschickter and Copeland,⁷ in a review of 425 cases of multiple myelomas do not mention the association of amyloidosis.

Amyloidosis may be classified as follows:

1. Primary or idiopathic amyloidosis, in which there is no apparent underlying suppurative or neoplastic condition. In this group there are two forms:

(a) The diffuse or typical form, as it occurs in the liver, spleen, kidneys, and so on. Associated diffuse

involvement of the bone marrow has been described by Geiber.⁸

(b) The localized or atypical form, in which a tumor-like amyloid deposit is present, as for instance in the larynx and the base of the tongue (Kramer and Som⁹ and others). In some cases amyloidosis has been observed in the muscles, trachea and lung. These tumors may also be multiple and may be combined with the diffuse form.

2. Secondary or symptomatic amyloidosis, in which a known preexisting cause is present, such as tuberculosis, neoplasms or chronic suppurative processes. In this group too there are two forms which correspond to the two forms of the idiopathic group:

(a) Diffuse involvement affecting typically the liver, kidneys, spleen and adrenals, or atypically in sites that are usually spared, as the viscera, muscles and bone marrow.

(b) Localized involvement, which may occur within neoplasms or chronic inflammatory areas or in the form of tumor-like amyloid deposits, especially in the upper air passages.

Combinations of these types are frequently present.

Cases of local amyloidosis at first regarded as idiopathic in origin have often shown on closer study an underlying myeloma, which can be easily overlooked in the presence of extensive amyloid deposits within the tumor tissue itself. The diagnosis is especially apt to be missed or even rendered impossible in those cases of isolated amyloid tumors occurring in organs such as the viscera or muscles, with the causative pathologic condition, the myeloma involving the bone marrow only. In these cases associated clinical and roentgen evidence of myeloma should be looked for and, even though not found, a biopsy of a rib is advisable. Thus, the number of cases of amyloidosis that are regarded as idiopathic would be minimized.

There also are cases in which local amyloidosis may occur with Bence-Jones proteinuria but without evidence of myeloma in histologic sections or on roentgen examination, as in the case of Michelson and Lynch.¹⁰ This type of case must still be included in the idiopathic group.

In multiple myelomas the deposition of amyloid may show the tendency toward the formation of isolated nodules or of solid masses, as illustrated by the case of Helly¹¹ in which a large pelvic tumor proved to be amyloid. In addition to the location within the myelomatous tissue, amyloid may also be present in the bone marrow, muscles and joints. The muscles were particularly involved in the case described by Paige,¹² with masses of amyloid up to 15 by 10 by 6 cm.

The following case is the twelfth one reported illustrating the formation of amyloid tumors in association with multiple myelomas.

REPORT OF CASE

HISTORY—E. S., a white woman, aged 39, married, entered the medical service of Dr. Tice in April 1935 complaining of marked weakness, stiffness in the joints with difficulty in moving about, inconstant pains in the sternum, chest, hips and spine, vomiting, and a "lump" in the sternum. She was in good health until November 1934, when she first noticed the dull

From the Department of Surgical Pathology (Dr. R. H. Jeffe, director), and from the Medical Service of Dr. Frederick Tice, Cook County Hospital.

¹ Askanazy, Max. Concerning Local Amyloid Deposition in the Intestinal Musculature. *Verhandl. d. deutsch. path. Gesellsch.* 7: 32-34, 1904.

² Magnus-Levy, Adolf. Euglobulinemia and Amyloidosis in Multiple Myeloma. *Clinical and Pathologic Aspects*. *Ztschr. f. klin. Med.* 126: 62-111, 1933.

³ Chester, W. Multiple Myeloma and Hyperproteinemia. *Ztschr. f. klin. Med.* 124: 466-477, 1923.

⁴ Rosenblatt, M. B. Amyloidosis: Diagnosis and Clinical Manifestations. *Ann. Int. Med.* 8: 678-689 (Dec.) 1934.

⁵ Rosenheim, M. L., and Wright, G. P. Multiple Myelomatosis with Generalized Amyloid-like Deposits and Unusual Renal Changes. *J. Path. & Bact.* 37: 332-334 (Sept.) 1933.

⁶ Randall, O. S. Multiple Myeloma Complicated by Intestinal Obstruction. *Am. J. Cancer* 19: 838-846 (Dec.) 1933.

⁷ Geschickter, C. F., and Copeland, A. N. Multiple Myeloma. *Arch. Surg.* 16: 807 (April) 1928.

⁸ Geiber, F. E. Amyloidosis of the Bone Marrow. *Arch. Path.* 17: 620-630 (May) 1934.

⁹ Kramer, Rudolph, and Som, M. L. Local Tumor-Like Deposit of Amyloid in the Larynx. *Arch. Otolaryng.* 21: 324-334 (March) 1935.

¹⁰ Michelson, H. E., and Lynch, F. W. Systemized Amyloidosis of Skin and Muscles. *Arch. Dermat. & Syph.* 29: 805-820 (June) 1934.

¹¹ Helly, K. *Handbook of Special Pathologic Anatomy*. Henke-Lubarsch, 1: 1063, 1927.

¹² Paige, B. H. A Case of Myeloma. Unusual Amyloid Deposition. *Am. J. Path.* 7: 691-699 (Nov.) 1931.

pains as stated, which troubled her especially at night. A peculiar weakness developed four months prior to admission accompanied by a progressive stiffness in her joints causing her to become bedridden. The swelling in the upper part of the sternum was first noticed at this time also and after reaching its present size did not seem to grow much and was not tender. Vomiting was first noticed in January 1935, when it lasted for one month and was attributed to a thick slimy post-



Fig 2—Destruction of all the ribs on both sides complicated by many fractures. Some of the areas simulate an osteolytic neoplasm.

nasal drip. About one month prior to admission the vomiting recurred and was associated with the nasal drip. She had vomited at least once daily and often seven or eight times the vomitus consisting of food eaten or of stringy mucus. In spite of this her appetite was good and there had been no noticeable loss of weight.

The past history was essentially negative except for a premature menopause in 1931. The patient had been married six years but had never been pregnant.

Examination—On admission the patient seemed to be fairly well nourished and except for some pallor did not seem to be ill. The blood pressure was 148 systolic and 100 diastolic. The skin was soft and appeared warm, but there was no edema. Examination of the nasopharynx showed no apparent cause for a postnasal drip, and no discharge was seen. Over the manubrium there was a moderately firm nontender swelling about 5 cm in diameter and 2 cm in height fixed to the underlying tissues. Small nodules, which were slightly tender were felt in the ribs at the axillae. The examination of the lungs and heart gave negative results. The abdomen showed a smooth enlargement of the liver which extended 8 cm below the costal margin. The spleen was not palpable. The extremities could be moved freely without pain and the reflexes were normal. Fundoscopic examination was negative.

Course—The patient's condition remained about the same, her chief difficulty being persistent vomiting which did not respond to any therapy, including administration of large amounts of sodium chloride. Edema was at no time present. Weakness increased somewhat accompanied by lassitude and after a stay of ten weeks in the hospital she insisted on going home. She left June 29, 1935 at which time her general condition was approximately the same. Her blood pressure on discharge was 60 systolic and 40 diastolic. Death occurred several days after she left the hospital.

Permission for a postmortem examination was not obtained but biopsies of the sternal mass and of a rib had been taken before the patient left the hospital.

Laboratory Examination—The blood Kahn reaction was negative. The icterus index was normal. The blood urea nitrogen June 14, was 171 mg per hundred cubic centimeters of blood and on June 20 was 151.75 mg. At this time the non-protein nitrogen was 285 mg and creatinine 12 mg. Cholesterol was 357 mg and the blood serum had a peculiar milky appearance. The total protein May 6 was 5.55 per cent. June 20 the serum albumin was 2.61 per cent and globulin 1.12 per cent, with a blood calcium of 7.45 mg and phosphorus of 4.76 mg per hundred cubic centimeters of blood. The blood indican was negative but tests for the blood phenols were moderately positive.

A congo red test as described by Shapiro¹³ was done May 14 and showed a strongly positive reaction for amyloid, since 90 per cent of the dye was removed from the blood stream in one hour. The urine remained colorless.

The blood examination April 5 showed hemoglobin 80 per cent, red blood cells 4,200,000, white blood cells 3,600. The differential count showed no abnormal forms. June 15 the hemoglobin had dropped to 60 per cent, red blood cells 3,100,000, white blood cells 4,000 and the differential count remained the same. Abnormal rouleau formation in wet and dried smears was not noted.

The urine showed many interesting features. It was usually straw colored with a peculiar opalescent appearance. The specific gravity ranged between 1.008 and 1.014. Albumin was constantly present in large quantities, but in the form of a proteose that could not be identified. It appeared at about 50 degrees but was not dissolved on boiling. Bence-Jones protein could not be found on numerous examinations by different chemists. Many white cells and granular casts were constantly



Fig 3—Small discrete areas of destruction in both iliac bones and in the lower ribs.

present but no lipid bodies. Phenolsulfonphthalein excretion by cystoscopy showed appearance of the dye in about twenty-six minutes from each ureter but only in small amounts. Stool and gastric analysis were essentially negative.

Röntgen Examination (by Dr C. H. Warfield)—There were many well defined discrete areas of destruction throughout both tables of the skull measuring from 2 to 7 mm in diameter (fig 1).

There were areas of osteolytic destruction in all the ribs, which were irregular in shape, broke through the cortex into the soft tissues, and were complicated by many fractures. Some of these areas were as large as 3 cm. in length and as wide as the rib (fig 2). There was no gross deformity of the thoracic cage. The dome of the left diaphragm was high, the heart was not enlarged, and no widening of the mediastinal shadows was observed.

The inner end of both clavicles was completely destroyed, though the cortex had been preserved. The entire sternum was decalcified. The manubrium showed osteolytic destruction due to what appeared to be a tumor extending posteriorly (fig 4).

Both humeri and femurs showed similar small discrete areas of destruction as seen in the skull (figs 2 and 5).

The tibia and ulna on both sides showed no destruction.

Both iliac bones showed small discrete areas of destruction similar to that seen in the skull (fig 3).

The lower dorsal and lumbar spines showed marked decalcification and moderate osteo-arthritis. There was a marked narrowing of the bodies of the first and second lumbar vertebrae.

The pyelogram on the right side showed a small pelvis elongation of the major calices and normal cupping and papillae. The left side was similar. There was a bilateral increase of the pulmonary hilus markings and thickening of the interlobar pleura of the left side.

No joint changes were noted.

Examination of the gastro-intestinal tract was negative.

SUMMARY

The roentgen examination of the skull and both iliac bones revealed conditions quite typical of multiple myeloma. The changes in the ribs and sternum suggested a metastatic osteolytic neoplasm.

A biopsy taken from the tumor mass over the manubrium sterni revealed microscopically fine and coarse wavy bands and masses of a structureless homogeneous material that stained diffusely with eosin. Scattered about were nests of small round

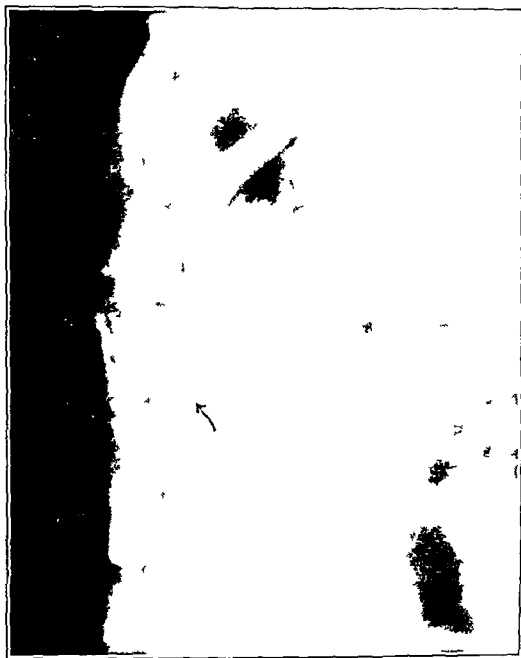


Fig. 4—Amyloid tumor in manubrium sterni and areas of decalcification through the sternum due to the osteolytic destruction.

cells and single foreign body giant cells which were found attached to the homogeneous masses. Occasionally the homogeneous masses were surrounded by a loose fibrillar connective tissue. No tumor tissue could be identified.

Congo red stained the eosinophilic material bright red. Fine deposits of a similar material were seen in the walls of the small arteries. The histologic diagnosis was tumor-like amyloidosis of the bone marrow.

A biopsy of a rib was subsequently taken in order to determine the cause of the amyloidosis. The medulla of the rib showed solid nests of cells, chiefly lymphocytes, and also round and oval cells with an ample cytoplasm and eccentrically placed nuclei, resembling plasma cells (fig 7). Occasionally there appeared to be transitional stages between the two cell types. Scattered about were small deposits of eosinophilic staining material. By special stains (congo red or gentian violet) this material was shown to be amyloid. The histologic diagnosis was lymphocytic myeloma with amyloidosis.

PATHOGENESIS

The origin of amyloid in multiple myeloma is still a question. Magnus-Levy² maintains that the most logical source is the bone marrow, which is responsible also for the abnormal euglobulin formation and Bence-Jones protein.

It is only a presumption that the destruction of the bone marrow produces the excessive amounts of proteins that are found in the blood stream in cases of multiple myeloma and in turn lead to stasis and the subsequent formation of amyloid.

However, Jaffe¹⁴ has shown experimentally that the formation of amyloid may be due to an acquired hypersensitivity to abnormal protein substances with the probable origin of the amyloid from collagenous tissue. The latter view also would furnish a more adequate approach to the etiology of the idiopathic amyloidosis.



Fig. 5—Area of destruction in the upper end of the humerus simulating a neoplastic lesion.

COMMENT

A study of the literature indicates that the bone marrow is a frequent site of amyloidosis in cases of multiple myelomas. When present, the amyloid presents itself as isolated infiltrations in the wall of the vessels as massive accumulations in the form of tumors, and as isolated deposits within the preexisting myelomas. That the bone marrow may be diffusely infiltrated with amyloid unassociated with a preexisting blastoma has been shown in the cases of Gerber⁵ and others. In a series of nine cases of multiple myelomas examined by Jaffe,¹⁵ no amyloidosis of the bone marrow was found.

Clinically, our case presented practically all the features typical of multiple myelomas, modified to some degree by the presence of the complicating amyloidosis. Vague aches and pains in the joints, spine and chest could be attributed to amyloid infiltrations of the joints and joint spaces, as described by Magnus-Levy. However, these symptoms are often present in the absence of amyloidosis and without roentgen evidence of joint involvement. Symptoms of renal insufficiency, low

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Arch. Path. & Lab. Med. 1: 25-36 (Jan.) 1926.
15 Jaffe R. H. Personal communication to the author.

blood pressure and large amounts of protein in the urine are of common occurrence in both multiple myelomas and amyloid nephrosis. Roentgen evidence as in this case is usually most marked in the skull with numerous typical punched out areas of osteolysis. In other bones there may be a resemblance to a metastatic neoplasm (figs 2 and 5).

In most cases there is an increase in the blood proteins, identified by Magnus-Levy² as euglobulin which may rise to 8 per cent. The renal manifestations of our case can be attributed, at least in part, to an amyloid nephrosis with a fall in the blood proteins to about half of the normal, due to the large amount of protein lost with the urine. Perl and Hutner¹⁰ consider the myeloma kidney a chronic nephrosis with secondary contraction but Bell¹¹ believes that obstruction of the tubules by casts of Bence-Jones proteins causes an atrophy and that there is no true nephrosis present.

The typical Bence-Jones protein could not be identified in our case. Instead an atypical proteose was present constantly in the urine in large quantities. It was very similar to the proteose described in the case of Rosenheim and Wright, and its formation is probably due to the same derangement of protein metabolism.

Interpretation of the roentgen appearance of the bones may become difficult when the myeloma is heavily infiltrated with amyloid as demonstrated in the roentgenogram of the ribs and may even take on the appearance of a metastatic osteolytic neoplasm. Biopsies should always be done in such questionable cases to facilitate an accurate diagnosis.

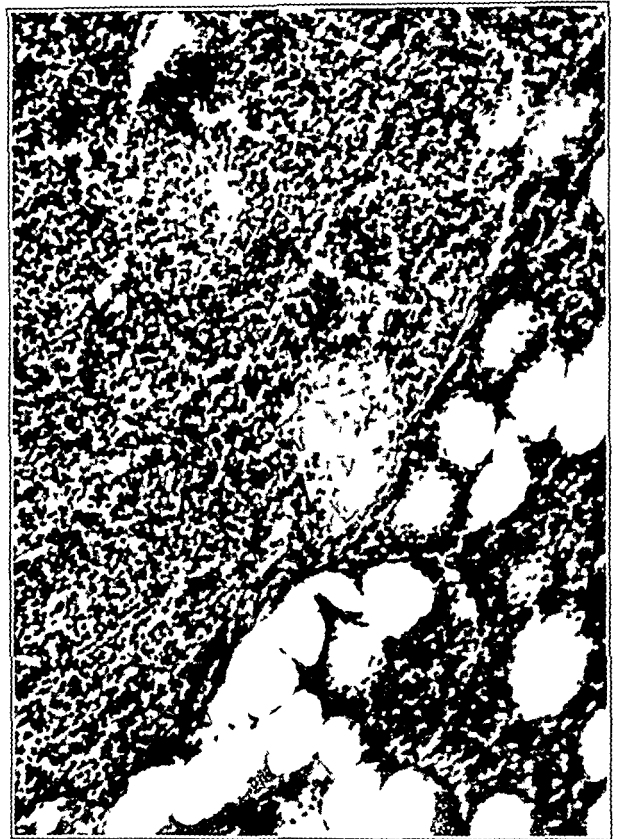


Fig 7—Section of a biopsy of a rib showing lymphocytic character of the myeloma and beginning amyloidosis in the bone marrow. X 600.



Fig. 6—Section of a biopsy of the tumor of the sternum showing large masses of amyloid and single multinucleated giant cells. X 400.

that produces the Bence-Jones protein. The congo red test in our case furnished clinically a very valuable aid to the diagnosis of a diffuse amyloidosis, most of the dye having been removed from the blood stream in a short time.

CONCLUSION

A patient with multiple myelomas and a local tumor-like deposition of amyloid presented clinically the picture of multiple myelomas with a nephrotic syndrome. Death occurred from renal insufficiency.

In cases appearing as primary or so-called idiopathic amyloidosis either local or diffuse repeated biopsies are advisable to exclude the possibility of an underlying myeloma.

In all cases of multiple myelomas the congo red test should be performed in order to detect an eventually associated amyloidosis.

In multiple myelomas, instead of the typical Bence-Jones protein atypical proteins may be found in the urine possessing the same diagnostic significance as the former.

A Great Relief—It is a great relief to come from the world of public affairs where no one dares to admit that he does not know where no one ever admits that he has made a mistake where no one ever admits that he is puzzled into a world where it is respectable and honorable and safe to put aside the pretension of infallibility and of omniscience.—Lippmann Walter, Anniversary Discourse Before the New York Academy of Medicine *Bull. New York Acad. Med.* 11:673 (Dec.) 1935.

¹⁰ Perl, David and Hutner, Lawrence. Nephrosis in Multiple Myeloma. *Am. J. Path.* 6:283-298 (May) 1940.
¹¹ Bell, E. T. Renal Lesions Associated with Multiple Myeloma. *Am. J. Path.* 9:493-519 (July) 1940.

DIAPHRAGMATIC FLUTTER WITH SYMPTOMS OF ANGINA PECTORIS

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Diaphragmatic "tic" is sufficiently rare to justify one in reporting an authenticated example of this peculiarly interesting malady

The case to be reported is unique in that the movement of the minor contractions was recorded graphically and the rate was found to be 300 or more per minute, and a study of the diaphragm under the fluoroscope showed that the contractions were bilateral, spread over the entire diaphragm and apparently rhythmic in time and amplitude. The term "diaphragmatic flutter" is most appropriate and descriptive of the observed phenomenon.

There was associated with the disturbance of diaphragmatic function severe pain in the left pectoral muscle and in the left arm and hand over an area



Fig 1—Area of pain distribution and hyperesthesia

corresponding to the eighth cervical and the first, second and third dorsal segments of the cord (fig 1). Over the area of referred pain there was marked hyperesthesia, which persisted even after relief from pain followed cessation of diaphragmatic flutter.

REPORT OF CASE

J. C., a white man, age 57, a deep sea diver, admitted Feb 5, 1935, and discharged February 19, complained of a severe pain in the left side of the chest radiating down the left arm to the hand and accompanied by extreme anxiety and respiratory distress.

The patient was found ill on the sidewalk of the city. He stated that eighteen hours previously he had come to the surface from a diving bell without adequate decompression having been done. He felt no inconvenience from this until a few hours before the onset of the present illness at which time he was seized with agonizing pain in the left pectoral area accompanied by a cramplike pain in the left arm and the ring

and little fingers of the left hand. When seen in the admission ward he was begging to be put in an oxygen tent because he was convinced that he was suffering from caisson disease. He stated that he had had similar attacks in the past and that he was always promptly relieved when he was placed in an oxygen tent.

The patient appeared to be in great distress. The face was drawn and pale, and the body was fixed in a semirecumbent position with a tendency to lean toward the left side. He kept his hand constantly over the outer margin of the left pectoral muscle and was massaging at times the inside of the left arm and the ring and little fingers of the left hand. Cyanosis was notably absent. The first impression was that the patient was suffering from a serious cardiac malady and the examination was directed primarily to the heart and pulmonary system.

The heart was apparently normal in size and shape, rhythmic in action, with a pulse rate of 88. The sounds were distant but there was heard over the precordial area a to and fro shuffle which was interpreted as a pericardial friction rub. Blood pressure was 115 systolic, 45 diastolic. An immediate blood count showed a leukocyte count of 10,000 with 77 per cent polymorphonuclear leukocytes. An electrocardiogram taken while the patient was in the emergency ward showed changes strongly suggestive of coronary disease (fig 2). The mouth temperature was 101 F. There was made a tentative diagnosis of coronary occlusion with infarction of the heart muscle.

The patient was admitted to the hospital ward at 3 p.m. From this period until 9 o'clock the next morning he received three-fourths grain (0.05 Gm.) of morphine, hypodermically, with only partial relief. When seen the next morning it was apparent that he was having pain in the same area and that there was marked hyperesthesia confined to the area of referred pain. At this time he was examined by a group of physicians who noted the following interesting facts: There was a striking pallor of the skin, which was sweaty and cold. The respiratory cycles were jerky and were occurring at a rate of 12 to 15 per minute. There had been no change in the pulse rate but the blood pressure was 100 systolic, 65 diastolic. Over the precordial area the adventitious sound previously noted was plainly audible, but it became apparent that the sound was not synchronized with the heart beat but was occurring at a rate of 250 or more per minute and was accompanied by, and synchronized with, a tremor in the epigastric area. It was also observed that the adventitious sound was plainly audible over the entire lower third of the chest both anteriorly and posteriorly and was best heard over the lower lobes near the lung margins.

Under the fluoroscope the diaphragm was seen to be moving on inspiration and expiration and there were superadded minor contractions, which were occurring at a rate of 250 or more per minute with an amplitude of about 1 cm. The minor contractions spread over the entire surface of the diaphragm on both sides, were apparently rhythmic, and could be best described as being a flutter of the diaphragm. With the assistance of the department of physiology a graph of the diaphragmatic flutter was recorded (fig 3).

It seemed reasonable to conclude that there was some connection between the clinical symptoms and the disturbed function of the diaphragm, and it was decided that blocking the phrenic nerve was a reasonable therapeutic procedure. This was done with procaine hydrochloride infiltration anesthesia of the left phrenic nerve, which immediately relieved the chest pain and the tremor previously noted in the epigastric area disappeared. An examination of the chest showed that the adventitious sound was no longer present and the fluoroscope showed that the left side of the diaphragm was not functioning, the right side of the diaphragm was moving normally, and there were no abnormal contractions on either side.

The patient remained comfortable for a period of seven hours when there was a recurrence of the pain, the epigastric tremor and the adventitious auscultatory phenomenon. He was again viewed under the fluoroscope and it was noted that there was a recurrence of the diaphragmatic flutter. As a matter of experiment the right phrenic nerve was infiltrated and the pain was immediately relieved. A restudy of the diaphragm under the fluoroscope showed that the right side of the diaphragm was not functioning but that the left was functioning normally and there was no tremor on either side. It was again noted that there was complete absence of the to and fro shuffle

sound that had been heard constantly during numerous examinations prior to the phrenic nerve block. It appeared therefore, that both the pain and the adventitious sound were in some way induced by the abnormal functioning of the diaphragm.

A very complete study was then instituted in an effort to determine the cause of the diaphragmatic disturbance. Roentgen studies were made of the sinuses, mediastinum, the entire gastrointestinal tract, the heart and the lungs. The sinuses showed

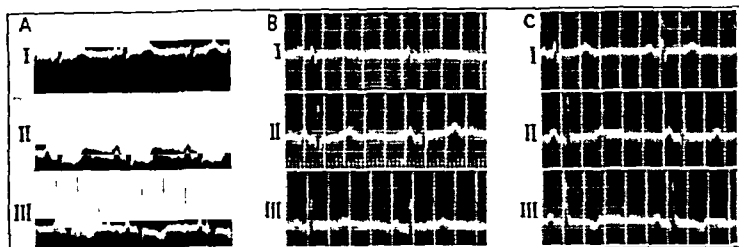


Fig 2—The changes in the T wave are the significant alterations in the electrocardiogram. A severe paroxysm of pain diaphragmatic rate 300+. B no pain normal diaphragmatic function. C onset of precordial pain with recurrence of diaphragmatic flutter.

slight haziness, and there was thickening of the descending branches of the bronchi with slight haziness at the bases of the lungs, which was interpreted as being indicative of a mild degree of bronchiectasis. The heart and aorta were entirely normal. While in the hospital the patient had a cough and expectorated from 1 to 2 ounces (30 to 60 cc) of mucopurulent sputum, and the temperature varied from 101 F to normal.

It was concluded that the fever and expectoration were indicative of a subacute pansinusitis complicated by bronchiectasis with infection.

The patient left the hospital against medical advice and with only slight modification of his clinical condition, except for those periods of marked improvement following the procaine infiltration.

COMMENT

The case here reported presents many interesting problems for consideration. The patient, after leaving the hospital, was traced through the Associated Press to other hospitals in the Eastern states. Through personal communication it has been possible to gather useful data concerning the further course of this patient. In one hospital where he was, the conclusion reached was that the patient was a morphine addict who voluntarily induced the disturbance of diaphragmatic function in an effort to secure the drug. This impression was held by one other observer who studied the patient.

It does not seem reasonable to conclude that this was the true situation. Our observations, which considered this aspect of the case seriously, convinced us that the man was seriously ill and that he sought morphine only because he was having severe discomfort. It is conceivable that he may have become habituated to morphine if it is concluded that the attacks of diaphragmatic disturbance continued to recur.

Cases of a somewhat similar character have been studied by observers both in America and in continental Europe. Gamble, Pepper and Muller¹ have reported an interesting case of a man, aged 38, who developed very rapid respiration during convalescence from an attack of encephalitis. The only subjective complaint was slight pain in the left arm and shoulder extending down to the elbow, with soreness of the right arm. The respiratory movements were recorded with a pneumograph and were from 60 to 90 per minute. Under the

fluoroscope the diaphragm was seen moving on inspiration and expiration, but there were superadded minor contractions to the larger excursions of the diaphragm. When the breathing was voluntarily controlled, the only motion of the diaphragm was the tic. This patient was permanently relieved by exposing the phrenic nerve on each side and freezing the nerve with an ethyl chloride spray. The respiratory rate fell immediately from 96 per minute to 20 per minute and remained so thereafter.

Simonin and Chavigny² have reported two cases observed over a long period, which they described as chorea of the diaphragm. In the first case the diaphragmatic disturbance apparently recurred over a period of more than two years. The rate of movement of the diaphragmatic jerks reached 60 per minute. The patient was manifestly a psychoneurotic individual and it was thought that the disturbance was hysterical in nature. In the second case the rate of the diaphragmatic tic was from

65 to 70 per minute and this was confirmed by fluoroscopic examination. It was bilateral and involved the entire diaphragm and is referred to as small rapid beats superimposed on the normal diaphragmatic contractions. The patient was followed for a period of twenty-seven months with little or no tendency to improvement. The final conclusion was that the disturbance was functional but probably in some way related to an attack of pleurisy that had occurred a few years previously.

Kulenkamp³ reports that a patient aged 27, during convalescence from what was thought to be encephalitis, had a disturbance of respiration which was found to be associated with a tremor or tic of the diaphragm. There were no subjective symptoms related to the cardiorespiratory apparatus. After a thorough study

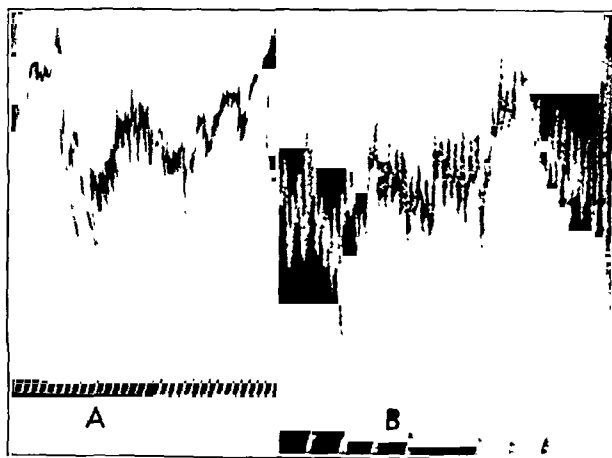


Fig 3—Kymographic tracing during a severe paroxysm of pain. A diaphragmatic flutter rate 300+. B tracing magnified photographically.

of the case he concluded that the diaphragmatic disturbance was in some way related to a central nervous lesion and that it was similar in its behavior to the shaking movements noted in postencephalitis paralysis agitans. He felt that the diaphragmatic tremor was of a similar nature and probably was related to a cen-

¹ Gamble C J, Pepper O H P and Muller G P. Postencephalitic Tic of the Diaphragm. Pulmonary Overventilation and Relief by Blockade of Phrenic Nerve. J A M A 85 1485 1487 (Nov 7) 1925

² Simonin and Chavigny. Chorea of the Diaphragm. Paris med 6 191 (Sept 2) 1916

³ Kulenkamp G. Tremor of Diaphragm Following Influenza. Deutsche Zeitschr f Nervenhe 94 312 314 1926

tral nervous lesion accompanying encephalitis. No definite statement is made, but the impression is that the case was followed for a prolonged period without any notable variation in the clinical symptoms.

From a clinical standpoint, one of the most interesting subjective disturbances occurring with diaphragmatic tic and flutter is the referred pain which in many instances closely simulates the pain of angina pectoris. Roemheld⁴ has described a clinical syndrome which he referred to as the "gastrocardiac syndrome" in which he attempts to describe a definite type of angina pectoris which he feels is related to disturbance of function in the stomach and colon.

Lurje and Stern⁵ have recently described a similar clinical entity under the head of "cardiodiaphragmatic syndrome." They believe that there exists a group of patients who have pain in the left thorax which is referred down the arm and which is associated with many of the cardinal symptoms of angina pectoris and is due entirely to malfunction of the diaphragm. After various manipulative measures, such as distending the stomach and colon with gas, they reach the conclusion that this syndrome is directly related to a hypotonus of the diaphragm which allows this structure to be pushed upward by a subdiaphragmatic collection of gas, which in turn disturbs cardiac function sufficiently to induce a group of symptoms similar in every respect to angina pectoris.

Winkler⁶ in a complete discussion of cardiac pain and its relation to diaphragmatic angina has reviewed the whole subject at considerable length. In this detailed review he is convinced that there exists a syndrome quite similar to that of angina pectoris associated with coronary disease, which is in some way related to the diaphragm. He concludes that, in the general consideration of the subject of angina pectoris, one must list as a special disease picture the diaphragmatic angina which has heart pain radiating pains and states of anxiety quite similar to that of Heberden's angina, and differing only in that there is rarely that acute sense of impending death. He feels that it is based on a group of reflexes which proceed from the diaphragm, which are partly sensory and partly motor in nature. He goes even further and recommends that the connection of the phrenic nerve to the sympathetic chains be interrupted surgically in an effort to cure the more intractable cases.

Similar conclusions have been reached by Hofbauer⁷ in which he describes attacks of angina pectoris, which he feels were definitely associated with and dependent on pathologic lesions of the diaphragm as well as disturbance of its physiologic function.

My experience with this patient convinces me that there is a syndrome which closely simulates angina pectoris and is directly related to a functional disturbance of the diaphragm. Just how much emphasis should be placed on the syndrome is difficult to decide. It is conceivable that disturbances of the diaphragm of a similar type to those observed in this patient may be more frequent than has been realized, for the clinical symptoms and physical phenomena are most elusive, and, judging from my experience with the case under discussion, it would be quite explicable for one to class

the patient as a malingerer or conclude that a coronary accident had occurred, while the true nature of the illness goes unrecognized.

The diagnosis may be further confused by temporary alterations in the electrocardiogram made during the peak of a paroxysm. Just how these changes are produced is difficult to conceive, unless there occur in the myocardium nutritional alterations. The disappearance of the changes with cessation of diaphragmatic flutter suggests a direct relationship to the disturbance of diaphragmatic function.

My experience with this patient and others who suffered from lesser degrees of what was manifestly a similar clinical condition gives evidence that the most important differential diagnostic point between Heberden's angina and the "cardiodiaphragmatic syndrome" is that the latter condition is characterized by a notable absence of substernal pain and constriction and there is a tendency on the part of the patient to be restless, which is in bold contrast to the fixity of one undergoing an episode of angina pectoris.

The case here presented emphasizes the conclusions of other observers that there exists a clinical condition which is justifiably described as cardiodiaphragmatic angina.

ESOPHAGITIS

A CLINICAL STUDY

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AND

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The esophagus usually is considered immune to the usual diseases that attack other organs of the body. Much has been written concerning carcinoma and stricture of the esophagus and cardiospasm, but little has been written about the most common disease of the esophagus—esophagitis.

In a recent study, we¹ found the incidence of esophagitis to be 7.02 per cent in 3,032 necropsies performed. Definite symptoms occurred in 10.3 per cent of the 213 cases in which a pathologic diagnosis of esophagitis was made. Although in thirty-two cases (10.3 per cent) there were definite symptoms that suggested esophagitis, a clinical diagnosis was made in only one case. All the information obtained concerning the symptoms of esophagitis was volunteered by the patients. It seems reasonable to suppose that, if the patients had been questioned as a routine with regard to the symptoms of esophagitis, the percentage of patients who had symptoms which suggested esophagitis would have been increased and the clinical diagnosis would have been recorded more frequently than it was.

OCCURRENCE

The anatomic structure of the esophagus makes it vulnerable to the organisms of the oral cavity, the regurgitated gastric contents, and infection through the blood stream and the lymphatic structures from the abdominal viscera. Esophagitis is most frequently the accompaniment of diseases in which there is frequent vomiting and in which passage of a stomach tube is

⁴ Roemheld, L. in discussion on Lurje, S. J. and Stern, B. M. Gastrocardiac Syndrome or Cardiodiaphragmatic Syndrome. *Ztschr. f. klin. Med.* **119**: 541-544, 1932.

⁵ Lurje, S. J. and Stern, B. M. Connection Between Cardiodiaphragmatic Syndrome and Collection of Air in Left Hypochondrium. *Ztschr. f. klin. Med.* **115**: 552-569, 1931.

⁶ Winkler, F. Cardiac Pain and Its Relation to Diaphragmatic Angina. *Wien med. Wchnschr.* **83**: 447-450, (April 15) 1935.

⁷ Hofbauer, L. Angina Pectoris Diaphragmatica. *Munchen med. Wchnschr.* **80**: 411-415, (March 17) 1933.

From the Division of Medicine the Mayo Clinic.
¹ Butt, H. R. and Vinson, P. P. Esophagitis. I. Anatomy, Physiology and a Review of the Literature. II. A Pathologic and Clinical Study. *Arch. Otolaryng.* to be published.

employed in treatment Tileston² and Sheehan³ observed that esophagitis was favored by stenosis of the pylorus or duodenum, which led to frequent vomiting. We recently have shown that the incidence of gastric intubation and vomiting closely parallel the increased incidence of esophagitis.

Moutier⁴ reported several cases of postoperative esophagitis, and we found that in 159 (74.6 per cent) of 213 cases of esophagitis the disease had followed some form of operative procedure.

Jackson⁵ observed evidence of chronic foci of infection in 90 per cent of cases of "peptic ulcer" of the esophagus and Mosher⁶ noticed the frequent association of this condition with infection of the gallbladder. Moersch and Camp⁷ suggested that intra-abdominal infections such as cholecystitis, duodenal ulcer and appendicitis, might be carried by lymphatic vessels to the esophagus and give rise to localized esophageal infection.

The work of Cushing⁸ and that of Masten and Bunts,⁹ stress the frequency and danger of esophageal inflammation in tumors of the brain and in other conditions which involve the central nervous system.

The relationship between esophagitis and superficial burns, diabetes mellitus, arteriosclerosis and many other conditions had been recorded in the literature.

SYMPTOMS

The most common symptom of esophagitis usually is described by the patient as a "burning" in the thorax. This occurred in seventeen (53.2 per cent) of the thirty-two cases in which symptoms were present. This burning pain is most often in the brick and lower third of the sternum. The pain, as pointed out by Eusterman, Moersch and Camp,¹⁰ often simulates the pain described in histories of cases of peptic ulcer. In fact, Rivers¹¹ observed that 45 per cent of his patients with esophageal ulcer gave a history which simulated that of peptic ulcer.

Hematemesis and melena have been reported as symptoms that occur in the course of esophagitis. The former is the most common type of bleeding in this condition. Pringle and Teacher¹² have emphasized the importance and danger of postoperative hematemesis. Anesthetic agents have been accused by some writers, and no doubt these agents do often excite vomiting, but just how they could produce bleeding we cannot understand. In our series of 213 cases hematemesis occurred in fifteen (40.8 per cent) of the thirty-two cases in which there were symptoms. It was the second most frequent symptom. The amount of blood that was vomited varied from a few cubic centimeters to

200 cc. A few of the patients vomited blood on several occasions. Grossly, all the lesions presented acute ulcerations and involved the lower third of the esophagus. In one case the entire esophagus was involved. In none of the cases in which hematemesis was present was the esophagus suspected clinically as being the source of the bleeding. At necropsy, no other lesion which could account for the bleeding was found in the upper part of the alimentary tract, except the ulcerated esophagus.

Dysphagia was present in nine cases (28.1 per cent), the probable cause of this symptom was spasm of the esophagus which resulted from the inflammatory lesion. Dysphagia frequently was accompanied by substernal pain. In a few cases the dysphagia was so severe that it was necessary to feed the patient with a tube.

As Barclay¹³ pointed out, the patient with esophageal ulcer may go through all the stages of hypertrophy, pain, obstruction and starvation and often may remain comfortable in a stage of semistarvation.

In twenty-three (71.9 per cent) of these cases, esophagitis followed operation. The symptoms usually appeared from twenty-four to forty-eight hours after operation and continued for from three to ten days. In the remaining nine cases, in which operation was not performed, the symptoms usually began several days before death. In a few of the cases in which gastric intubation was employed the symptoms appeared a short time following the procedure.

DIAGNOSIS

Substernal burning and pain, hematemesis and dysphagia are the most common symptoms. Whenever any of these symptoms occur, the diagnosis of esophagitis should be considered. This is especially true if the symptoms appear following vomiting, gastric intubation or infection.

Jackson, in discussing Winkelstein's¹⁴ report, said that esophagoscopy was indicated in every case in which unyielding gastric symptoms were present. Levine¹⁵ also found this method of use in the diagnosis of esophagitis.

Barclay and others have stressed the importance of roentgen rays as a diagnostic procedure. Usually there is spasm of the lower third of the esophagus without dilatation. Administration of belladonna according to Barclay relieved the spasm in some cases, whereas in other cases it had no effect. The severity of the spasm does not appear to depend on the degree of inflammation. Otell and Coe¹⁶ described spasm as the chief roentgenographic characteristic of ulcer of the esophagus, but according to these authors "the roentgen appearance in acute esophagitis shows no variation from the normal."

TREATMENT

The simplest treatment of esophagitis is prevention. Less trauma in the passage of stomach tubes certainly would decrease the incidence of the disease. Vomiting should be controlled as much as possible. If pain becomes severe, dissolving ethyl aminobenzoate lozenges in the mouth and swallowing the saliva may be helpful. An icebag to the sternum and neck often will

² Tileston, Wilder. Peptic Ulcer of the Esophagus. *Am J M Sc* 122: 240-265 (Aug.) 1906.

³ Sheehan, J. E. Ulcer of the Esophagus from the Standpoint of an Esophagoscopist. Its Cause, Symptomatology, Diagnosis and Treatment. *M J* 27: 319-320 (Feb. 21) 1920.

⁴ Moutier, E. Acute Postoperative Esophagitis. *Arch d mal de l'app digestif* 11: 126 (No. 2) 1921. *abstr J A M A* 76: 1536 (May 28) 1921.

⁵ Jackson, on Chevalier. Peptic Ulcer of the Esophagus. *J A M A* 92: 369-372 (Feb. 2) 1929.

⁶ Mosher, H. P. Hemorrhage into the Esophagus at Birth and in the Adult. *J Laryngoscope* 41: 591-622 (Sept.) 1931.

⁷ Moersch, H. J. and Camp, J. D. Diffuse Spasm of the Lower Part of the Esophagus. *Ann Otol Rhin & Laryng* 43: 1163-1173 (Dec.) 1934.

⁸ Cushing, Harvey. Peptic Ulcers and the Interbrain. *Surg Gynec & Obst* 55: 134 (July) 1932.

⁹ Masten, Mabel C. and Bunts, R. C. Neurogenic Fissions and Perforations of the Stomach and Esophagus in Cerebral Lesions. Report of Six Cases. *Arch Int Med* 54: 916-930 (Dec.) 1934.

¹⁰ Eusterman, C. B., Moersch, H. J. and Camp, J. D. Peptic Ulcer at the Junction of the Esophagus and Cardia. Ulceration at the Esophagus. *M Clin North America* 14: 565-71 (Nov.) 1930.

¹¹ Rivers, A. P. Pain in Benign Ulcer of the Esophagus. Stomach and Small Intestine. *J A M A* 104: 1691-4 (Jan. 19) 1935.

¹² Pringle, J. H. and Teacher, J. H. Dilation of the Esophagus as a Cause of Postoperative Hematemesis. *Brit J Surg* 6: 52-56 (April) 1919.

¹³ Barclay, A. F. The Digestive Tract. Radiological Study of Its Anatomy, Physiology and Pathology. Cambridge University Press, 1933. p. 177.

¹⁴ Winkelstein, Asher. Peptic Esophagitis. A New Clinical Entity. *J A M A* 104: 906-909 (March 16) 1935.

¹⁵ Levine, S. A. A Case of Ulcer of the Esophagus with Extraordinary Medical Experiences. *M Clin North America* 13: 189-195 (July) 1929.

¹⁶ Otell, I. S. and Coe, F. O. Dysphagia. Roentgenologically Considered. *Am J Digest Dis & Nutrition* 2: 11-126 (April) 1915.

give relief Bastedo, Friedenwald and Soper¹⁷ give many helpful suggestions in their recent symposium Soper pointed out the value of a bland, smooth diet and the usual difficulties encountered when alkalis are administered Olive oil and cool milk have been suggested as helpful therapeutic procedures We advocate the administration of tincture of belladonna, in doses of 20 drops (12 cc) every three or four hours for relief of spasm, a soft diet, and sedatives for pain Morphine sulfate in small doses is administered when the pain is severe Feeding with a tube and measures to prevent vomiting should be employed

When the condition results in the formation of an ulcer, Barclay found that the passage of a bougie may so stretch the base of the ulcer that healing and complete relief of all symptoms may follow

CONCLUSIONS

1 Esophagitis is the most common condition affecting the esophagus

2 It should be suspected when substernal pain, dysphagia or hematemesis is present Hematemesis which occurs at any time, but especially that which occurs after operations or any acute illness, should make one suspect the esophagus as its source

3 It is advisable to perform esophagoscopy in every case in which there are unyielding gastric symptoms

THE PREVALENCE OF VITAMIN A DEFICIENCY AMONG IOWA CHILDREN

P C JEANS, MD

AND

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IOWA CITY

In 1934 we¹ described a photometer test for dark adaptation which we believed useful in detecting vitamin A deficiency Subjects with impaired ability to adapt to the dark were found to attain normal standards of dark adaptation after a period of vitamin A ingestion The study that was reported seemed to establish the validity of the dark adaptation test as a test of vitamin A deficiency With the photometer test being used as the criterion, a survey was made among Iowa school children in an endeavor to determine the frequency of vitamin A deficiency This presentation is for the purpose of recording the results of the survey

The first phase of the study, i e, the original testing, was conducted in 1934 from February to April inclusive The total group examined comprised 404 children from 6 to 15 years of age selected at random from rural, village and urban schools The village selected was a county seat of approximately 2,000 population The children of the rural group were from numerous small schools located within a 10 mile radius of the selected village, they were transported to the village for the test All the village and rural children were examined in the same dark room and under the same standardized conditions The urban children were in a city of approximately 150,000 population and

were attending four different schools Though the examinations were made in four different places, the conditions of the test were thoroughly standardized in each location The urban children were classified according to the economic levels of their parents Many of the families at the lowest economic level were receiving assistance

The results of the survey are most readily comprehended by examination of table 1 A distinction has been made between those with borderline subnormal and those with definitely subnormal dark adaptation Considering only those definitely subnormal, it was found that the proportion having poor dark adaptation in the rural group was 26 per cent and in the village group 53 per cent, in the urban group the proportion in the upper economic level was 56 per cent, at the middle level 63 per cent and at the lowest level 79 per cent Analysis of our data failed to reveal any relationship between vitamin A deficiency and either age or sex

The results obtained were definite and clean cut and no obvious reason was apparent for doubting them However, the proportion of subnormal results was so unexpectedly high that it was thought best to continue the study by reexamining some of the children after a period of vitamin A ingestion An attempt was made to include in this second phase of the study all the rural and village children who had had borderline or definitely subnormal results at the first testing For a period of several weeks either halibut liver oil or carotene in oil was administered each school day by the teachers Those who did not show normal dark adaptation by the time school closed were given one of these products to use at home and at the same time we started bringing the children in small groups into the Children's Hospital and retaining them until normal dark adaptation was attained Of the total group of ninety nine rural and village children whose tests had shown abnormal results, all except twelve continued under observation The reasons for these twelve exceptions were illness, removal from the district or lack of cooperation These twelve children did not receive a second test Nine other children were observed and tested further but did not continue to the completion of their study Six of these were dropped from the

TABLE 1—Survey of Iowa School Children as Regards Dark Adaptation

Economic Level	Number Examined	Per Cent Normal	Per Cent Borderline Subnormal	Per Cent Definitely Subnormal
Rural				
Middle to low	100	64	10	26
Village				
All levels	102	37	10	53
Urban				
Upper	70	34	10	56
Middle	70	27	10	63
Low	62	11	10	79

group because they refused to come to the hospital, the others were discharged from the hospital after a few days because of exigencies in the home All nine of these children, however, showed definite and unmistakable improvement in dark adaptation before they went from under observation

In our former publication the incidence of vitamin A deficiency found in a hospital group was reported at 21 per cent It was stated that no significance should be attached to the proportion found The report was concerned primarily with description of the test rather

17 Bastedo W A Friedenwald Julius and Soper H W Symposium on Management of Esophagitis Am J Digest Dis & Nutrition 2 379 1935

This study was assisted by a grant from Mead Johnson & Co Read in part before the American Pediatric Society in May 1934 From the Department of Pediatrics State University of Iowa College of Medicine

1 Jeans P C and Zentmire Zelma A Clinical Method for Determining Moderate Degrees of Vitamin A Deficiency J A M A 102 892 (March 24) 1934

than the frequency of deficiency. Approximately 50 per cent of the children examined in the first study were orthopedic and pediatric patients who had been hospitalized repeatedly and in some instances at short intervals for treatment of chronic afflictions not affecting their nutrition. In retrospect it appears that the effect of hospital diet and the dietary instructions given

TABLE 2—Results of Retesting After Administration of Vitamin A

School	Number Subnormal First Test	After Administration of Vitamin A or Carotene			
		Not Retested	Number Normal	Number Improved*	Number Unimproved
Rural Village	36	9	24	3	0
	63	3	51	6	3
Totals	99	12	75	9	3†

* Only a brief period of observation permitted
† After approximately six weeks of treatment

for home care offer sufficient explanation for the discrepancy apparent in the incidence figures of the two reports.

The data presented in table 2 show that of the seventy-eight children who continued under observation only three failed to attain normal dark adaptation. These three remained in the hospital for from three to six weeks and it was impracticable to keep them longer. Careful ophthalmologic examination failed to reveal any abnormality that would account for the poor dark adaptation. It would be only conjecture to state that a protracted period of vitamin A deficiency may have produced a refractory state and that possibly a longer period of vitamin A ingestion would have brought about improvement. We have noted that the children who required the longest stay in the hospital to attain normal dark adaptation, as well as these three who did not become normal, were those who did not like foods rich in vitamin A or carotene. If these three children are considered to represent exceptions to the rule that the dark adaptation test is a test of vitamin A deficiency, the test is still more than 95 per cent efficient when applied in a large scale survey.

The halibut liver oil and carotene in oil were administered in dosages computed to be approximately equivalent to the vitamin A content of 3 teaspoonfuls of cod liver oil daily. Of the children whose dark adaptation was subnormal the great majority attained normal adaptation within a period of a month after starting ingestion of vitamin A. At the dosage levels used, no difference was detected between the effectiveness of vitamin A and of carotene.

The second phase of this study gave evidence in addition to that in our former report that the test described is useful in detecting vitamin A deficiency. Also the conclusion seems permissible that the test may be used in large scale surveys with small chance of error even if expert medical consultation is not employed. It is indicated also that vitamin A deficiency is much more prevalent than usually has been assumed.

Two other studies of the prevalence of vitamin A deficiency among school children have been found in the literature. Widmark and Svensson examined approximately 1200 children from all economic and social strata of the manufacturing and seaport city of Malmö, Sweden, with a population of 120,000. They

used the photometer test of Edmund, which consists of a single test of vision immediately on entering a dark room and without a period of adaptation. Only nine children were thought to have vitamin A deficiency. Frandsen³ found slight hemeralopia in forty-six of sixty-five apparently healthy school children of Copenhagen, latent hemeralopia was present in seventy of seventy-two children examined as private patients for eye complaints. Improvement or cure was produced by the administration of cod liver oil for several weeks or months. The degree of night blindness was determined by the ability to distinguish letters of varying shades from black to faintest gray on a white background, in a light of constant dimness, after an adaptation period of from five to ten minutes.

SUMMARY

Using a test for ability to adapt to the dark as the means for detecting vitamin A adequacy, we found that 26 per cent of a rural group and 53 per cent of a village group of Iowa children presented evidence of vitamin A deficiency, in an urban group the proportion for the higher economic level was 56 per cent, for a middle level 63 per cent and for a low economic level 79 per cent. Of the seventy-eight village and rural children who were deficient in vitamin A and who continued under observation, all except three developed normal dark adaptation after a period of vitamin A or carotene ingestion.

TRANSFUSION OF CADAVER BLOOD

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The striking results of V. N. Shamov in experiments on dogs and the special conditions of the work in my clinic, frequently requiring immediate blood transfusion, stimulated me to attempt the use of cadaver blood for transfusion in human beings. My first experience was with the case of a young engineer who slashed both of his wrists in a suicidal attempt. He was brought to our hospital pulseless and with slow, jerky respiration. Transfusion with 420 cc of blood taken from the cadaver of a man, aged 60, who had been killed in an automobile accident just six hours before, promptly revived him.

My assistants Dr. M. G. Skundina and Dr. S. I. Barenboim¹ studied in dogs the oxygen exchange according to Barcroft before bleeding, after partial exsanguination, and after transfusing these animals with blood taken from dogs killed a few hours before. They were able to show that cadaver blood when transfused into animals dying of acute anemia was capable of reviving them and that it immediately raised the oxygen content of the blood and participated actively in the gaseous exchange. They further demonstrated that cadaver blood preserved its living properties in the blood vessels of dogs for from six to eight hours when the cadavers were kept at a temperature of 1 or 2 degrees above zero. Studies in human beings showed

3 Frandsen H. Hospitalstid 77:42 1934 cited in Nutrition Abstr. & Rev. 1:621 (Jan.) 1935
Translated by Dr. George Halperin

Read before the first Russian Congress for Blood Transfusion at Moscow in February 1935

1 Skundina M. G. and Barenboim S. I. Transfusion of Cadaver Blood. Novy Khirurkhiy 101, 1932

2 Widmark E. M. T. and Svensson B. Skandin Arch f Physiol 74:127 (July) 1938

that the hemoglobin of the recipient rose immediately and that the volume percentage of oxygen became materially raised

A series of forty-nine clinical cases demonstrated the therapeutic effectiveness of the new method. Cadaver blood did not exhibit any toxic effect and its therapeutic results were not different from those obtained with the blood from living donors. There remained, however, the problem of the Wassermann reaction. It was solved when I demonstrated that cadaver blood can be preserved in a refrigerator. I took the chance of transfusing a patient, bleeding to death from a gastric ulcer, with the remains of unused blood kept in the refrigerator for three days. The patient's condition improved to such a degree as to enable me to perform the difficult operation of stomach resection for a deep duodenal ulcer penetrating into the pancreas. Further studies demonstrated that it was possible to keep the blood in a citrate solution for as long as four weeks. Thus, of course, solved the problem of the Wassermann reaction. It likewise made it possible to check up on the sterility of the preserved blood by cultures. This together with a careful necropsy performed on each cadaver, protected the recipient to the fullest degree.

We soon learned to select the more suitable cadavers, such as those of persons dying in an attack of angina pectoris, those killed by an electric current or those who hanged themselves. From 2 to 3.5 liters of blood can be easily obtained from a cadaver that is not damaged and that amount will suffice for five or six average transfusions. Before long we not only had enough blood for our own clinic but we were able to supply it to a number of hospitals and even send it to distant points.

The technic of withdrawing blood is simple. The jugular vein is severed and a glass cannula to which a rubber tube is attached is introduced into each end of the vein. The cadaver is then placed in the Trendelenburg position and the blood is allowed to run into a 500 cc glass flask. The neck of the bottle is stoppered with cotton and the bottle is placed in a refrigerator where it may be kept for one month.

My assistants Dr M. G. Skundina and Dr A. W. Rusakov demonstrated by carefully following the post-mortem injection technic that, after the injection of the cadaver with methylene blue, blood drawn from the jugular vein will not show any trace of the dye. It appeared that blood flowing from the jugular vein drains the systemic veins flowing into the superior and inferior venae cavae and not those from the lesser and the portal circulations. This is important in view of Shamov's observations that blood in the mesenteric veins is the first to become infected after the death of an animal. At room temperature, infection from the bowel will enter these veins after twenty hours. Because of this we decided to put the limit of usability of a cadaver at six hours for the summer and eight for the winter.

The researches of Skundina and Rusakov² on some 500 cadavers established interesting facts regarding the coagulation of the cadaver blood. They found that the coagulation of the blood and the further behavior of the coagulum depended on the cause of death in a given case and on the duration of the antemortem agony.

Blood of healthy individuals who died suddenly in traffic accidents, in drownings, in a heart attack or from an apoplectic stroke, rapidly coagulated if removed in the first few hours after death. The coagulated blood, however, returned in from one-half to one and one-half hours to the fluid state and would not coagulate again. Warming and shaking the blood accelerated the liquefaction or fibrinolysis, while saturating it with oxygen retarded the fibrinolysis. A number of sensitive biochemical tests failed to demonstrate the splitting up of the albumin molecule. For example, there was no increase in the serum of the residual nitrogen. They have succeeded in demonstrating that fibrinolysis here took place because of the gradual disappearance of the main component—the fibrinogen. A. W. Rusakov observed with the aid of an ultramicroscope the fine fibrin network break up into the tiniest kernels, which would not pass a filter.

Blood of individuals dying slowly showed an abnormally high sugar content while the blood of those dying after prolonged agony showed normal amounts. The high sugar content did not come from the so-called bound (tissue) sugar, if we assumed that splitting of the albumin molecule took place. Skundina and Rusakov were able to show that the source of sugar was the large hepatic veins for if they succeeded in operatively removing the liver before killing the experimental animal (rabbit or dog) the rise in the blood sugar did not take place. The increased sugar content, however, is no drawback to transfusion, because even in the massive transfusions it amounts to not more than 2 Gm.

There is a practical as well as a theoretical significance in the phenomenon of fibrinolysis occurring in the blood of individuals who die suddenly. Dr Skundina called attention to the fact that we have here "a paradoxical phenomenon in that the blood of sick people dying after an agony does not differ in its coagulating properties from the blood of the living, while the blood of individuals dying suddenly possesses the property of first coagulating and later relieving". Its behavior in this respect is analogous to that of blood extravasated into the peritoneal or the pleural cavity.

A. A. Bocharov, one of my assistants, recorded an interesting observation. Blood drawn from two accident cases, brought to the institute in a state of shock, underwent fibrinolysis and remained fluid. One of the patients died in spite of the measures resorted to in order to save him, while the other recovered after an operation and a massive blood transfusion. His blood on recovery coagulated normally. A profound shock is a state close to death. It would appear that in a shocked patient fibrinolysis begins while the patient is still alive.

The practical advantages of the phenomenon of fibrinolysis are, first that one can tell the fitness of the blood by observing its behavior with regard to coagulation even before the necropsy is performed, and secondly that this blood can be preserved without the aid of an anticoagulant. Blood preserved without the addition of the citrate solution undergoes hemolysis more rarely and after a longer interval. But what is more important is that while the citrate blood gives about 20 per cent of mild reactions, that without the citrate gives about 5 per cent.

The technic of transfusion consists of warming the blood to body temperature by placing the flask con-

² Skundina M. G. Rusakov A. W. and others. Transfusion of Cadaver Blood Without Preservatives. *Soviet Med.* 7: 194 (Nos. 2 and 3) 1934. Skundina M. G. Ginsberg R. E. and Rusakov A. W. Biochemical Changes in Cadaver Blood. *ibid.* 1935 No. 6 p. 78.

J. Yudin S. S. La transfusion du sang de cadavre à l'homme. *monographie* p. 64. by Prof. A. Gosset. Paris: Masson & Cie. 1933.

tuning the cadaver blood in warm water. The blood is then passed through a gauze filter into the vessel from which it is to be transfused. The transfusion can be performed with the aid of a Jubee or a Tzank syringe or by the gravity method from an ordinary funnel. The transfusion is performed slowly, always after an introduction of some physiologic solution of sodium chloride. A biologic test with from 10 to 30 cc is obligatory in every case.

We have not observed toxic manifestations in a series of almost 1,000 transfusions of cadaver blood. The seven fatalities occurring in our series were caused in each instance by a technical error and were not caused by the cadaver blood as such. In one case the necropsy established air embolism as the cause of death; in another, death was due to an anaerobic infection developing at the site of venesection. Two fatalities were caused by faulty grouping and incompatible blood. In three cases a typical picture of hemolysis was present.

The therapeutic results did not differ from those obtained by transfusion of blood from living donors. The particular advantage of our method is made evident in those acute emergencies in which the loss of time entailed in calling the donor and obtaining blood from him may prove fatal. Profound shock developing in the course of a brain operation or a prolonged laparotomy furnish just such emergencies. To warm up the blood removed from the refrigerator takes five or six minutes. Another valuable feature is the possibility of using blood from the same cadaver for repeated transfusions. It is obviously impossible to take from 450 to 500 cc of blood from a living donor at intervals of half an hour for three transfusions. This, however, becomes necessary in grave traumatic shock in which the effect of the first transfusion is spent about the time the amputation is begun, while the effect of the second transfusion performed during the operation lasts only a short time, making it advisable to give a third one. It is not safe to change donors in the course of anesthesia because there is no time for the performance of the biologic test. The problem is solved by having in stock preserved cadaver blood. The greater the loss of blood and the less there is of the patient's blood to mix with the transfused blood, the more important is the question of ideal compatibility. Having given some 200 or 250 cc of blood while preparing for the operation and being convinced of the compatibility of the blood, one need not hesitate to use the same for a second and, if need be, for a third transfusion.

Experience in our clinic with more than 300 cases of acute gastric duodenal hemorrhage has demonstrated that it is best to operate on these patients at once if they enter in the first twenty-four hours. They require however massive blood transfusion during and immediately after the operation. Conditions are much graver when patients are admitted after repeated hemorrhages from three to four days after the initial bleeding. Here it is safer not to operate but to treat them with oft repeated small transfusions.

I was however compelled as a last resort to operate in some of these cases. The occasional saving of such a patient in my opinion was in no small degree due to repeated massive transfusions of blood from the same source kept for just such occasions.

Two recent cases demonstrate these statements.

A 17 year old boy was admitted to our clinic Feb. 26, 1935 because of a profuse gastric bleeding. His pulse was 112, hemoglobin 17 per cent, blood group A V. An immediate transfusion with 20 day old blood of the A V group had the

desired effect. The vomiting stopped, the skin became pink and the general condition was satisfactory. On the following day he developed pallor, loss of consciousness and imperceptible pulse. There was profuse tarry stool. Transfusion of 150 cc of blood of group O again revived him. During the night another hemorrhage took place and the patient was in imminent danger of dying. The resident surgeon gave a transfusion with 350 cc of blood from the same source as the previous transfusion. Feeling that conservative measures would not avail here I decided to operate. A laparotomy performed under local anesthesia revealed a deep duodenal ulcer penetrating into the pancreas. As soon as the main gastric blood vessels were ligated, transfusion with compatible blood A V was begun. By the time the operation of gastric resection was ended the patient had received 1,100 cc of cadaver blood. He made an uneventful recovery.

In the following case, blood from one source was used each time.

This patient was brought to the clinic in fairly good condition following a single hemorrhage. He refused operation. Because of signs of internal hemorrhage, a transfusion with 280 cc of cadaver blood was given. The condition improved but two days later he had another hemorrhage and his hemoglobin was now 28 per cent and the number of red cells 1,750,000. The next day there was another hemorrhage and this time 300 cc of blood was given. I again urged an operation, but the patient declined. Two days later he vomited a quantity of blood and became pulseless. His condition again improved after transfusion of 200 cc of blood. The hemoglobin was 12 per cent and erythrocytes numbered 900,000. The patient now expressed the wish to be operated on. Hematemesis during the night rendered him a hopeless risk. As a last resort I operated under local anesthesia and demonstrated a large callous ulceration high up on the lesser curvature. On ligation of the gastric vessels transfusion was started and by the time the first Billroth resection was completed 1,000 cc of blood and 500 cc of physiologic solution of sodium chloride were infused. The patient was removed from the operating table in good condition and made a good recovery. His hemoglobin before the operation was 12 per cent and the number of erythrocytes was 900,000. Immediately after the operation the hemoglobin was 34 per cent and the number of erythrocytes 1,900,000. At the time of leaving the hospital his hemoglobin was 32 per cent and erythrocytes 2,360,000.

Our experience with cadaver blood transfusions embraces 924 transfusions. Besides our clinic sent out more than 100 flasks of cadaver blood to various hospitals and clinics.

CONCLUSIONS

- 1 Transfusion of cadaver blood was demonstrated in animal experiment and proved its therapeutic value in a considerable clinical material.
- 2 Cadaver blood obtained from six to eight hours after death remains sterile and preserves its living properties.
- 3 The recipient of cadaver blood is afforded ample safeguards by serologic tests of the blood, a bacteriologic checkup as to its sterility, and a careful necropsy.
- 4 Because of fibrinolysis blood of individuals dying suddenly remains fluid and can be preserved for more than three weeks.
- 5 The therapeutic effect of cadaver blood does not differ from that of blood from living donors.
- 6 The technic of obtaining blood from a cadaver is simple and does not require any special apparatus.
- 7 Organization of stations for collection of fresh cadaver blood should offer no difficulties in the larger cities, particularly in the large hospitals for emergency cases. The supply could come from traffic accidents as well as from the medical service where deaths from coronary thrombosis and angina pectoris are not rare.

THE RELATIVE IMPORTANCE OF SPECIFIC SKIN HYPERSENSITIVITY IN ADULT ATOPIC DERMATITIS

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The idea that certain skin diseases are due to changes in the "nerves"—and even in the psyche—is by no means new. However, such changes have been constantly and conclusively demonstrated in only a small minority of dermatologic entities, for example, herpes zoster, syringomyelia, nervous leprosy, the facies oleosa of parkinsonism, and certain cases of pruritus vulvae and pruritus ani.

There is another group of dermatoses in which the psychoneurogenic factor has been stressed but admittedly not conclusively proved. Nevertheless, many authors continue to give serious consideration to the possible role of the psyche and of the nervous system in these dermatoses.

One clinically important representative of the latter group is "generalized neurodermatitis." The very name that Brocq and Jacquet in 1891 gave this dermatologic entity—"neurodermite diffuse"—expressed their opinion as to its "nervous" origin. This opinion has continued to be shared by many good observers among whom, most recently, have been Stokes¹ and van de Eive and Becker.²

A newer concept is advanced by such authors as Rost,³ Sulzberger, Spain, Sammis and Shahan,⁴ Coca,⁵ Hill and others.⁶ These observers considered specific vascular skin hypersensitivity to foods and/or to environmental allergens to be the essential factor in the production of disseminated neurodermatitis. The apparent relationship between disseminated neurodermatitis and hay fever, asthma and infantile eczema—the "atopic" diseases (Coca)—has led several of these authors to propose substituting the name "atopic dermatitis" for "disseminated neurodermatitis" or "neurodermatitis disseminata." Hereafter, we shall employ the name "atopic dermatitis" in place of any of the older terms such as disseminated neurodermatitis, pruritus with lichenification, prurigo diathesique, flexural eczema, and hay fever eczema.

In consideration of the apparently conflicting opinions held by these two schools, we believe it may be of interest to review our observations in more than fifty cases of typical adult atopic dermatitis, with particular reference to these two contrasting points of view.

In our cases of this dermatosis (not uncommon in New York City), certain characteristics occurred with sufficient regularity to enable us to set up a composite picture of the syndrome of atopic dermatitis.

FAMILY HISTORY

Roughly, in more than half of our cases, one or more members of the family have or have had one or more of the atopic diseases.⁸

It seems to us that this familial atopic background speaks in favor of the atopic nature of the dermatosis under consideration, for even in vasomotor rhinitis and asthma the familial history of atopy is present in only about 50 per cent of the cases.

Unfortunately, we have been unable to determine the neurologic and psychiatric heredity in our cases. As dermatologists, we have found it to be beyond our powers to elicit and evaluate the psychiatric and neurologic family histories of our patients.

PERSONAL HISTORY

More than half of our cases were associated with one or more atopic diseases. Thus, here again, the conditions found are analogous to those in vasomotor rhinitis, and particularly to those in asthma, in which fully 50 per cent are without history of other atopies.

In our material we encountered no preponderance of manifest psychic or neurologic disturbances. In fact, our patients in this group impressed us as being neither more nor less "nervous," irritable or psychopathologic than any group of patients suffering from other chronic, distressing and sometimes disfiguring and incapacitating dermatoses. On the contrary, our atopic dermatitis patients, as a group, impressed us as showing fewer psychoneurotic tendencies than were found, for example, in a group of patients with moderately severe acne vulgaris.

We know of no way of accurately gaging such imponderables as "nervousness," "tension states," "temperamental difficulties" and "protoplasmic instability." Therefore, in gaining our impressions, we have been obliged to rely solely on close clinical observation.

Of course, we have encountered "nervousness," irritability and the like in a few of our cases. But we wish to emphasize that we have found no proof that this "nervousness" is a causal factor in the production of the dermatosis. In our material we have gained the impression that these occasional instances of "nervousness" were (1) purely coincidental, (2) concomitant (i. e., psychoneurologic disturbances caused by the same factor or factors producing the dermatologic manifestations) or (3) clearly the comprehensible result of the normal reaction to the dermatosis and its "maddening" itching, loss of sleep, continuous worry about the appearance, and related conditions.

COURSE OF THE DERMATOSIS

Although we are here concerned only with atopic dermatitis in adults, we must not fail to mention that, in many cases, the first phase of the dermatosis is often an infantile eczema. In other cases, three distinct phases are to be noted, namely, the dermatosis in infancy, in childhood and in the adult. These different phases may be separated by year-long intervals of complete freedom or they may continue uninterruptedly and be merged by imperceptible transition with the succeeding phase.^{6b}

The stage of atopic dermatitis that we are discussing here is a disease of early adult life. The average age of our patients at first consultation was 19 years. It is noteworthy that we have never seen a typical case of atopic dermatitis in an individual over 50 years of

1 Stokes J. H. Functional Neuroses as Complications of Organic Diseases. An Office Technique of Approach with Special Reference to the Dermatoses. *J. A. M. A.* 105: 1007 (Sept. 28) 1935.

2 van de Eive J. M. and Becker S. W. Functional Studies in Patients with Neurodermatitis. *J. A. M. A.* 105: 1098 (Oct. 5) 1935.

3 Rost G. A. Die Ekzemfrage vom kasualgenetischen Standpunkte. *Deutsche med. Wchnschr.* 56: 211 (Feb. 7) 308 (Feb. 21) 350 (Feb. 28) 1930.

4 Sulzberger M. B. Spain W. C. Sammis F. and Shahan H. I. Neurodermatitis in Certain Dermatoses. *I. Neurodermatitis*. *Arch. Derm. & Syph.* 3: 423 (July) 1932.

5 Coca A. L. The Diagnosis and Treatment of Allergic Diseases of the Skin. *J. A. M. A.* 103: 1275 (Oct. 27) 1934.

6 (a) Sulzberger M. B. A Suggestion for the Classification of Certain Allergic Dermatoses. *J. Michigan M. Soc.* 34: 78 (Feb.) 1935.

(b) Hill L. W. and Sulzberger M. B. Evolution of Atopic Dermatitis. *Arch. Derm. & Syph.* 32: 451 (Sept.) 1935.

7 We have recently had occasion to discuss this entire syndrome with Drs. Francis M. Rackemann, Lewis Webb, Hill B. Thurber, Guild, Henry N. Pratt and Jacob Swartz, all of Boston. This conference brought to light a remarkable unanimity of observations and opinions. We are indebted to these gentlemen for the opportunity of obtaining this general confirmation of our point of view.

8 We do not here include migraine, gastro-intestinal allergy, allergic epilepsy, urticaria, angioneurotic edema and other questionable atopies but have considered only asthma, hay fever and allergic vasomotor rhinitis and infantile eczema.

age Even in middle age, this dermatosis is extremely rare)

The course of the dermatosis is chronic, but in the majority of cases there are remissions during which the skin may be entirely normal. Recurrences are irregular in some cases, in others they are periodic and even distinctly seasonal. Among our cases there is a large group which exacerbates regularly in the period July-September and clears up after several months, only to recur at the same season in the next year. Even during the active attacks there are often rapid variations in the severity of both subjective and objective manifestations. We have never been able to discover the causes of these fluctuations, but many patients will insist that exacerbations are unquestionably due to one or more of the following substances: (a) heat, (b) cold, (c) rapid changes of temperature, (d) perspiration, (e) certain foods, notably fish, eggs and "acid foods", (f) specific articles of clothing, such as certain silk, wool or satin garments, (g) almost all greases and greasy ointments, (h) work, worry, "strain" and "nervous upsets."

Because of the unpredictable course of this disease, we have been unable, in general, to verify the patients' statements with regard to the rôle played by the incriminated factors. We have, however, occasionally found objective evidence that the ingestion of a food (such as fish, eggs or wheat) or the wearing of a garment (such as a silk scarf or a woolen dress) has been followed by an exacerbation of a more or less quiescent atopic dermatitis. We have also noted that the appearance of a common cold was in some cases regularly followed by a flareup of the existing condition.

However, we know of no regularly successful production of the dermatosis by deliberate exposure to the presumptive causes during dermatosis-free periods. It must therefore be emphasized that, although the mass of clinical evidence suggests the rôle of exposure to certain alleigens, the conclusive proof of the causal rôle of any and all of these agents is still lacking.

But the deliberate experimental exposure to allergens has not always been entirely without results. While we have never reproduced the actual atopic dermatitis, we have in some instances succeeded in eliciting other definite responses that prove skin hypersensitivity, for example, itching and urticaria after ingestion or injection of fish, and localized hives after contact with silk.

Just as it has been impossible for us to produce the dermatosis by experimental exposure, so has it also been impossible to effect a cure by the removal of suspected substances. We have noted, however, that changes of environment (home or hospital) or an intercurrent infection other than the common cold have in some cases led to a rapid clearing up of the active dermatosis. The beneficial effects of changes of environment may be due to the elimination of causal allergens, on the other hand, in some instances the benefit may be due to the removal of causes of emotional upsets.

However it is difficult to interpret the occasionally striking benefits that follow intercurrent infections as other than a nonspecific immunologic alteration.

It will suffice to mention here that precisely these two differences—change of environment and intercurrent infection—are frequently and as strikingly beneficial in asthma, hay fever and infantile eczema.

A critical analysis of the course of atopic dermatitis must lead to the one conclusion that skin hypersensitivity is a part of the producing mechanism in

some of our cases. It is evident, however, that, just as in vasomotor rhinitis and in asthma, other important factors are still entirely unknown.

DESCRIPTION OF THE DERMATOSIS

This dermatosis, not to be confused with "contact" or true eczema, has been so well described that we shall here be brief.

The outstanding symptom is itching, continuous or in crises. This itching is frequently increased by various factors, which we have already mentioned.

The primary dermatologic lesion is a papule, or a number of confluent papules forming lichenified areas. In uncomplicated cases there is no vesiculation, but there may be weeping, crusting and exudation, usually due to superimposed external irritation and infection. The lichenified plaques are not very sharply demarcated. They vary in color from a bright pinkish red to a tannish brown or a dirty grayish brown. The lichenified, thickened areas are usually surrounded by outlying, scattered and often excoriated papules.

In typical cases the distribution is characteristic and often diagnostic. The predominant localization is in the flexures—the antecubital and popliteal spaces, and the front and sides of the neck. Additional favorite sites are the eyelids, the forehead and scalp, the dorsa of the wrists, the perionychial areas of the fingers, and the dorsa of the feet. However, no skin area is immune, scattered plaques or papules are not infrequently found anywhere on the skin. In fact, severe cases may present involvement of the entire integument.

While the eruption is often symmetrical, it is never zoniform, segmentary, systematized, or in any way distributed along the course of cutaneous or other nerves.

In our experience all patients have dry skins and not infrequently even a fully developed keratosis pilaris. In fact, the follicular localization of the lichen papules may often be noted. In many patients we have observed a tendency toward cutis anserina. We have seen (in two cases) the very first manifestations of this dermatosis to be in the form of urticarial lesions, sometimes confined to the cubital and popliteal spaces.

The patients are otherwise healthy and, as mentioned previously, the average age was 19 years at the first consultation.

We do not believe that the appearance of this dermatosis can be interpreted as an argument in favor of either the psychoneurologic or the sensitization concept.

RESULTS OF INVESTIGATIVE PROCEDURES

We have employed three methods of skin testing.

1. *Scratch Tests*—In more than 50 per cent of our cases scratch tests have given positive results to various foods and environmental allergens. We wish to point out that, as a group, these patients possess the strongest and most polyvalent hypersensitivity to be encountered. (As an example, one patient, tested with 100 allergens, gave fifty-six markedly positive reactions.) However, it must be mentioned that, just as in (non-hay fever) vasomotor rhinitis and in asthma, almost 50 per cent of the clinically identical cases were negative to all scratch tests. Without wishing to draw conclusions at this point, we merely state that the majority of fall-exacerbating cases presented positive wheal reactions to ragweed pollens. We have also noted that silk elicited by far the highest percentage of strongly positive reactions. (House dust was unfortunately not included in our tests.)

2 Passive Transfer Tests—The patients giving positive reactions to scratch tests also had a high percentage of passive transfer reagins in the blood serum. We have seen as many as twenty-eight different reagins of high titer in one and the same serum. We have not been able to demonstrate that substances giving positive wheal reactions with reagins were more likely to be of clinical significance than those eliciting non-reaginic skin responses.

3 Patch Tests—In these cases, patch tests are negative. In fact, it is astonishing, in view of the apparently highly irritable skins, to find that these patients rarely react to patch tests. Not only are they far less sensitive to patch tests than are contact eczema patients, but, what is more remarkable, our patients with atopic dermatitis have been less sensitive than normal persons. There is however one exception. A fairly representative proportion of cases manifested papulopustular reactions to certain salts of heavy metals and, in particular to nickel sulfate. This finding confirms that of Steiner⁹ (This reaction to heavy metal salts has not yet been properly evaluated in relation to atopic dermatitis or to any other disease. However, its papulopustular nature and its course differ markedly from the usual response seen to patch test in typical eczematous hypersensitivity. These two different forms of reaction cannot, without further study and proof, be accepted as of identical significance.)

COMMENT

It seems to us that the aggregate result of the observations with these three test methods points strongly to the conclusion that the dermatosis under discussion belongs to the atopic group.

As stated before, conclusive proof is still lacking that this dermatosis is a specific skin hypersensitivity to atopogens, for, to our knowledge, atopic dermatitis has not been regularly and deliberately reproduced by experimental exposure to allergens as have been asthma and hay fever. However, it seems to us that the scratch test and passive transfer results, weighed in conjunction with certain aforementioned clinical observations, constitute strong presumptive evidence in favor of the important role of specific skin hypersensitivity in the production of atopic dermatitis.

There are, of course, some authorities who will insist that the skin test and reagin manifestations are in no way related to the dermatosis, except as far as they demonstrate its association with other atopic diseases, past, present or potential. In other words, they state that the skin disease is not due to a specific skin hypersensitivity but is only associated, in some inexplicable way, with atopic diseases. This hypothesis seems tenuous. Before it can possibly be accepted it must be supported by at least as much evidence as we have adduced in support of the probable clinical importance of the skin hypersensitivity. As far as we know, no such evidence has as yet been submitted.

Our further observations in atopic dermatitis can be summarized briefly as follows. There was a moderate to marked eosinophilia in about 50 per cent of our cases. Dermographism, of either the red or the white type, was not a constant finding, but, in isolated cases, there was such marked whealing to trauma that skin testing by the direct scratch or intracutaneous method was impossible. This dermographism sometimes disappears and recurs spontaneously. Many of our cases

showed signs considered to be diagnostic of vegetative nervous system. Others showed manifestations of sympatheticotonia or of a mixed form of vegetative neurosis. The sum of the results of our investigative procedures must, in our opinion, speak in favor of the atopic nature of this dermatosis and even in favor of the clinical role of skin hypersensitivity in the production of atopic dermatitis.

THERAPY

Many therapeutic measures have been found to be more or less efficacious and their benefits to be more or less lasting. Local roentgen therapy is the sovereign remedy and often brings quick results particularly in the first few attacks. As topical applications we have found pastes and powdery lotions to be superior in general, to ointments. Resorcinol, the tars, ethyl aminobenzoate, menthol and phenol can often be employed to advantage in these vehicles. Nevertheless, certain cases become inveterate and frequently constitute the most difficult therapeutic problems. While some of these defy every therapeutic measure, we have found one or more of the following to be worthy of trial: (1) generalized ultraviolet radiation (well below the erythema dose), (2) arsenic internally, (3) sedatives (not morphine or other opium derivatives), (4) pilocarpine, ephedrine and atropine, (5) autohemotherapy, (6) calcium injections, (7) strontium bromide injections, (8) hyperpyrexia, (9) dilute hydrochloric acid by mouth, (10) nonspecific vaccine therapy (catarrhal vaccine) and (11) thyroid extract.

As previously stated, hospitalization or other change of environment sometimes produces rapid and marked improvement. Just as reported by other observers,¹⁰ we have also found that some of our patients improved when they were relieved from psychic, emotional upsets, and from the frictions and obligations of everyday life. However, this beneficial effect was no more striking than that encountered in patients with proved sensitizations, such as asthma or hay fever, or in individuals suffering from many organic (peptic ulcer, coronary disease) and even infectious diseases (tuberculosis). In our opinion it is dangerous to conclude that a disease must be psychogenic for the one reason that the psyche exerts an influence on its course.

Elimination of suspected foods, reputedly efficacious in the hands of some observers, has proved disappointing in our material. We admit that we have found great difficulty in carrying out rigid elimination diets in our ambulatory patients.

We have not been able to test the effects of elimination of air-borne allergens, as we have had no available allergen-free rooms. Since our reacting patients regularly had skin test reactions and reagins not only to foods but also, in at least equal degree, to inhalant substances, we do not believe that the significance of the positive skin tests can be properly evaluated until both suspected foods and suspected environmental allergens can be simultaneously eliminated (elimination diets while in allergen-free rooms).

We have attempted specific hyposensitization in several cases, by means of injection of the suspected atopogens. This measure has been without success. But we do not consider that the failure of this method negates the existence of a specific skin hypersensitivity, for it is well known that persistent hyposensitization injections in patients with hay fever and asthma, while they often reduce the clinical hypersensitivity of the mucous membranes, do not, as a rule, accomplish a noticeable reduction in skin sensitivity.

⁹ Steiner, K. Ueber die Ergebnisse und den Wert der funktionellen Hautprüfung mittels der Lappchenprobe bei Hautkranken und bei Haut Gesunden. Arch f Dermat u Syph 157: 600, 1929.

¹⁰ Stokes¹ and der Erbe and Becker²

It must be mentioned that atopic dermatitis not only runs an eccentric course with as yet, inexplicable exacerbations and remissions but also in most cases leads sooner or later to an equally mysterious spontaneous recovery

SUMMARY AND CONCLUSIONS

1 In a study of more than fifty cases of typical adult atopic dermatitis we could find no convincing evidence of the primary importance of psychoneurogenic factors in the production of atopic dermatitis

2 The family history, the personal history, the course and the results of investigations and therapy demonstrate that this dermatosis is closely associated with diseases of the atopic group

3 Our observations also strongly suggest that specific skin hypersensitivity is in many cases an important factor in the production of atopic dermatitis

4 There is as yet no convincing evidence that atopic dermatitis can be regularly produced by deliberate exposure to suspected allergens or that the dermatosis can be regularly ameliorated by removal of allergens

5 While the adduced evidence strongly suggests that atopic dermatitis is due in many cases to specific skin hypersensitivity, unequivocal proof is still lacking

962 Park Avenue

Clinical Notes, Suggestions and New Instruments

THE USE OF PAPAVERINE IN ACUTE ARTERIAL OCCLUSIONS

GEZA DE TAKATS M.D. CHICAGO

Papaverine, an alkaloid of the opium group was first advocated for the relief of smooth muscle spasm by Professor Pal¹ of Vienna. On the basis of clinical observations backed up by animal experiments, he stated that the drug relaxes smooth muscle without paralyzing it and recommended it in hypertension in angina pectoris and for the abortion of uremic crises. A comprehensive pharmacologic study of this drug was given by Macht.² Summing up the circulatory effects of papaverine he noted a fall in blood pressure which was due partly to the effect on the brain but chiefly to peripheral action as it produced a marked vasodilatation especially of the peripheral and splanchnic arteries. The drug increased coronary circulation, slowed the heart and at the same time increased the strength of contraction. As to its effect on respiration papaverine dilated the bronchi and diminished the rate of respiration but increased the volume output and alveolar ventilation. It did not depress the respiratory center as shown by its lively response to carbon dioxide inhalation. It relaxed all types of smooth muscle without paralyzing them. Its analgesic property could be demonstrated after the subcutaneous injection of 40 mg in man which corresponded to the effect of about 10 mg of morphine. The dose that both Pal and Macht recommended in man was not to exceed 0.06 Gm (1 gram) by mouth from 0.06 to 0.10 Gm (1 to 1½ grains) subcutaneously and from 0.01 to 0.04 Gm (one sixth to two thirds grain) intravenously.

Recently Denk³ made the significant suggestion of treating patients suffering from acute embolic occlusion with intravenous doses of papaverine. He stated that the results in ten cases were equal to those obtained by embolectomy and he felt that the results were due to a release of a vessel spasm which occurs at the time of the acute embolism and represents an additional menace to the affected part.

It has long been supposed that sudden arterial obstructions produce a reflectoric vessel spasm both in the affected artery and in the collateral vascular tree. The literature containing evidence in this direction has been concisely summarized by Allen and MacLean.⁴ The most clear-cut evidence is that of Mulvihill and Harvey⁵ who found that when the external iliac arteries of dogs were ligated a drop in the temperature of the hind limbs developed which gradually subsided in an average of thirteen hours. When however, a lumbar sympathectomy was performed before the ligation, the drop in temperature did not occur. If sympathectomy was performed when the temperature had already dropped it immediately returned to normal. Thus the exclusion of the vasoconstrictor influence on the limb prevented the manifest circulatory embarrassment.

In a previous communication I⁶ referred to the use of papaverine to overcome the initial spasm of collaterals in acute vascular occlusions. Five cases are now presented.

REPORT OF CASES

CASE 1—C. H. a 42 year old, stocky, robust man, had an operation for inguinal hernia under local anesthesia, Dec 4, 1934. There followed an entirely uneventful convalescence with primary union of the wound. He was discharged from the hospital on the fourteenth day. On the fifteenth day, while sitting quietly at home reading the paper, he was suddenly seized with dyspnea and a feeling of impending death. He first became pale, then cyanotic and lost consciousness. I arrived at his home five minutes later. His pulse was barely palpable, his skin was cold and clammy, his respiration was superficial and very rapid. One-sixth grain (0.01 Gm) of papaverine hydrochloride was given intravenously. Within two minutes his pulse became slower and increased in volume. The respirations were slower and deeper. His color became normal. Subsequent portable x-ray examination revealed a triangular infarct in the right lung thus confirming the diagnosis of pulmonary embolism. He recovered completely.

CASE 2—Mrs I. A. aged 42, referred by Dr O. G. Schnetzer developed a fever following the extraction of four teeth with apical abscesses. April 7, 1935, she developed an arterial occlusion first in the left and later in the right limb. Both limbs were cold, pulseless, cyanotic. Pain was extreme, unrelieved by morphine. Papaverine hydrochloride (one-sixth grain) was given about eight hours later as none was available in the hospital when the patient was first seen. This seemed to relieve the pain and the color of the feet improved. She was admitted to St. Luke's Hospital next day. During the first three days, papaverine (one-sixth grain) was given twice a day intravenously which seemed to calm the extremely restless patient and enable us to place her in the negative pressure apparatus. The color of the feet gradually became normal until the tenth day after admission when another shower of emboli was thrown into first the right and then the left leg. The left foot became bluish gray and while pulsations were still present in both femoral arteries oscillations taken with Pachon's oscillometer, were absent at the mid thigh on the left and present on the right. No pulses were felt at or below the popliteal arteries. One half grain (0.03 Gm) of papaverine hydrochloride was then administered intravenously and the observations were made that are recorded in the accompanying table.

To sum up these observations, the pulse and blood pressure dropped but not to a subnormal level. The temperature of the big toe rose although not to a level of normal vasodilatation (31 C or 87.8 F). The color of the foot improved with the exception of the second toe and the pain was relieved. In this calm, relaxed condition which was by no means the type of somnolence or sleep produced by the barbiturates, the limbs could be placed in the boots of a negative pressure apparatus and treatment could be given for half an hour, which the patient was unable to stand previous to the injection of papaverine.

From the Department of Surgery, University of Illinois College of Medicine and St. Luke's Hospital.

¹ Pal J. *Das Papaverin als Gefäsmittel und Anästhetikum*. Dent. Med. Wchn. chr. 40: 164-168 (Jan. 23) 1914.

² Macht D. I. A Pharmacologic and Clinical Study of Papaverine. Arch. Int. Med. 17: 786-802 (June) 1916.

³ Denk W. Zur Behandlung der arteriellen Embolie. München. med. Wchn. fr. 51: 43-49 (March) 1934.

⁴ Allen E. V. and MacLean A. R. Treatment of Sudden Arterial Occlusion with Papaverine Hydrochloride. Proc. Staff Meet. Mayo Clin. 10: 216-220 (April 1) 1935.

⁵ Mulvihill D. A. and Harvey S. C. Studies on Collateral Circulation. I. Thermic Changes After Arterial Ligation and Ganglionectomy. J. Clin. Invest. 10: 423-429 (Aug.) 1931.

⁶ de Takats Geza. Obstructive Vascular Disease. Preliminary Report on Treatment by Alternating Negative and Positive Pressure. J. A. M. A. 103: 1920-1924 (Dec. 22) 1934.

While the right leg was seemingly in a state of sustained circulation the color of the left foot again became worse in spite of a number of negative pressure treatments and 1 gram (0.065 Gm) doses of papaverine by mouth three times a day. The second shower obviously had plugged the origin of the profunda femoris and the patient was returned to the care of Dr O T Roberg at the Swedish Covenant Hospital. There was still no gangrene at the time of discharge but the second toe was cyanotic. At autopsy, a week after her discharge from St Luke's Hospital, thrombotic occlusions of both popliteal arteries were found, but no source of any embolism.

CASE 3—Mr C W S, a patient of Dr Donald Abbott, was seen in consultation at the Billings Memorial Hospital. The patient had a severe coronary occlusion with auricular fibrillation on June 18, 1935. Two weeks later the right foot became cold and cyanotic but gradually improved. July 6 the right femoral artery became suddenly occluded. There developed a discoloration of all toes, but especially the first and second were involved. The skin became wrinkled and began to blister. When seen thirty-six hours after the vascular occlusion there was no pulse in the pedal and popliteal arteries. The oscillographic curves were negative to the mid thigh. The histamine reaction was negative below the knee. A diagnosis of popliteal embolism with a second shower to the origin of the profunda femoris was made. Passive vascular exercises from five to seven hours a day had already been started without any apparent effect on pain or circulation. A constant temperature heat cradle was employed and papaverine hydrochloride one-fourth grain (0.016 mg) twice a day was started intravenously, which was continued for four days.

Observations in Case 2

Time	Pulse	Blood Pressure	Temperature of Toe*	Color of Foot	Subjective Symptoms
Before injection	130	140/85	27.2 C (80.9 F)	Grayish blue	Restless moaned in pain
2 minutes after	130	140/80	27.4 C (81.3 F)	Same	Same
5 minutes after	120	140/75	27.8 C (82 F)	Definitely better	Same
10 minutes after	110	110/75	28.2 C (82.7 F)	Normal except 1st and 2d toes	Calm dozing
20 minutes after	100	110/70	29 C (84.2 F)	Normal except 2d toe	Sleepy but could be aroused
30 minutes after	100	110/70	29 C (84.2 F)	Normal except 2d toe	Calm comfortable

* Room temperature was 27.5 C (81.5 F) humidity unknown

Soon after the first injection a marked change took place in the color of the affected limb. It turned pink, the cyanosis of the toes disappeared. In order to sustain the gain in circulation, passive vascular exercise treatments were maintained for several weeks. A total of forty-one hours was given, at which time the collateral circulation was quite adequate but the pedal pulses were still absent. The histamine flares were normal throughout the extremity. On July 14 a sudden abdominal cramp was noted, which was interpreted as a mesenteric occlusion. July 16 a cerebral embolus followed by facial asymmetry and anarthria occurred. Passive vascular exercise treatments were then discontinued. July 28 another coronary occlusion was diagnosed, followed by a pericardial friction rub. The patient was transferred to his home and at this writing, two months after the vascular occlusion, the circulation of the limb was maintained outside an elliptic area of cutaneous gangrene just below the knee over the tibia, which slowly healed.

CASE 4—J V, a woman, aged 46, was seen in consultation with Dr A V Partipilo thirty hours after an acute vascular occlusion. The patient had had a chronic hyperthyroidism with auricular fibrillation and an adequately controlled diabetes. A diagnosis of an embolic occlusion at the iliac bifurcation was made. There was a complete absence of all peripheral pulses, including that of the femorals at the groin and a marked vessel spasm, which was manifest as high as the interiliac line. Both feet were cyanotic. Pain could not be controlled by morphine. Papaverine hydrochloride one-half grain (0.03 Gm.) was started

twice a day intravenously with no effect on the gangrene and only slight relief from pain. The patient refused to be hospitalized, developed a bilateral gangrene to the knee, and died eight days after the embolic occlusion.

CASE 5—W S was hospitalized in the medical service of Dr R W Keeton at the Illinois Research and Educational Hospital with the diagnosis of acute bacterial endocarditis since April 20, 1935. On May 9 he complained of excruciating pain in the left upper quadrant radiating to the shoulder, which was interpreted as a splenic infarct. July 25 a diagnosis of left popliteal embolism was made. A constant temperature heat cradle was used and sedatives were given. When he was seen thirty hours after the onset, there were no pedal and popliteal pulses, and the foot was numb, cold and cyanotic. The first and second toes showed beginning gangrene. Papaverine was started by mouth, 1 grain (0.065 Gm) three times a day, but because of some misunderstanding in the drug room intravenous injections were started July 27, approximately fifty hours after the vascular occlusion and were continued for five days. The gangrene progressed but remained dry and began to demarcate at the lower third of the leg. August 19 the patient had a left cerebral and on the 21st a brachial embolus. He died on the 22d with signs of respiratory failure.⁷

COMMENT

These five case reports would indicate that the arterial spasm accompanying an acute vascular occlusion may be relieved by an early intravenous administration of papaverine. While in the case of pulmonary embolism it seemed to act as a life saving measure (although the possibility of spontaneous recovery cannot be denied), in the case of peripheral occlusion it was possible to follow the marked subjective and objective improvement step by step. As Denk has pointed out, the extent and duration of the occlusion and the rigidity of the vessel wall may naturally set a limit to the capacity of the drug in aiding collateral circulation. He also warned of delaying embolectomy if the circulation did not rapidly improve.

In the case of Allen and MacLean there was a startling return of circulation in the right leg while in the left, in which there was a complete occlusion of the external iliac artery, the gangrene extended slowly so as to require an amputation through the upper part of the thigh. This case is especially instructive as it proves the point observed in the second and fourth patients, namely, that a complete block of the external iliac artery or any block above the profunda femoris cannot be readily compensated even if collateral spasm is released whereas, on the contrary, an occlusion distal to the profunda femoris can be easily overcome. Allen and MacLean also emphasized that the negative pressure treatments may act by inducing collateral circulation to open up more rapidly and this interpretation was suggested by Reid⁸ in analyzing his good results in acute vascular occlusions with the intermittent negative pressure apparatus.

The importance of papaverine injections seems to lie in the fact that it is a harmless procedure. While the suction treatment or the embolectomy is naturally limited to larger medical centers this drug is available to every practitioner and may either actually tide the limb over the critical period or enable the surgeon to operate at a time at which without papaverine the limb would have been frankly gangrenous. In the second and third cases the injection was combined with an intensive use of the suction apparatus of Reid and Herrmann. The papaverine not only calmed the patients but gave a possibly maximal vasodilatation during treatment. The desirability of reducing spasm in the extremities so treated has been stressed by Landis,⁹ who employed heat for this purpose. It seems likely, however, that papaverine gives a more widespread vascular relaxation than heat could accomplish.

If papaverine is to be of any benefit it must naturally be given as soon as the diagnosis of pulmonary or peripheral embolism is made. In the fourth and fifth cases the drug was given too late to influence the early spasm. There are no stable

⁷ Recently the drug was employed in a case of popliteal thrombosis following an orthopedic operation. With the exception of a pressure sore over the achilles tendon the circulation of the foot was sustained.

⁸ Reid M R. Diagnosis and Treatment of Arteriosclerotic Peripheral Vascular Diseases. *Am J Surg* 24: 11 (April) 1934.

⁹ Landis E M and Gibbon J H Jr. Effects of Alternating Suction and Pressure on the Blood Flow to the Lower Extremities. *J Clin Investigation* 12: 925 (Sept) 1933.

solutions of papaverine on the market. Papaverine, however, can be kept on hand in capsules, containing one-half grain (0.03 Gm.) of the crystals and may be readily dissolved in a 1 cc ampule of physiologic solution of sodium chloride. The solution may be quickly boiled in a spoon over a flame and the intravenous injection can be accomplished with a hypodermic needle and syringe. Slow injection is advisable. To obtain maximal benefit, the drug should be given in the first six hours, combined with controlled heat and intermittent negative pressure. Given later, the result must depend on the degree, extent and duration of organic occlusion.

The use of papaverine or its combination with controlled heat and negative pressure is by no means intended to eliminate embolectomy entirely. But very often suitable equipment and a trained surgical team are not available. Should papaverine fail an embolectomy may still be considered, but both procedures can be effective only if used within the first six or eight hours. Contrary to the aroused interest of continental and especially Swedish physicians, the medical profession at large is still hesitant to regard arterial embolism as a case of maximal urgency.

It is possible, as Allen and MacLean suggest, that coronary, cerebral mesenteric and renal vascular occlusions will be equally amenable to such treatment. It is likely that a better drug may become available. The principle, however, of combating the reflectoric vessel spasm of acute arterial occlusions seems an important one and deserves wide recognition among the medical profession.

SUMMARY

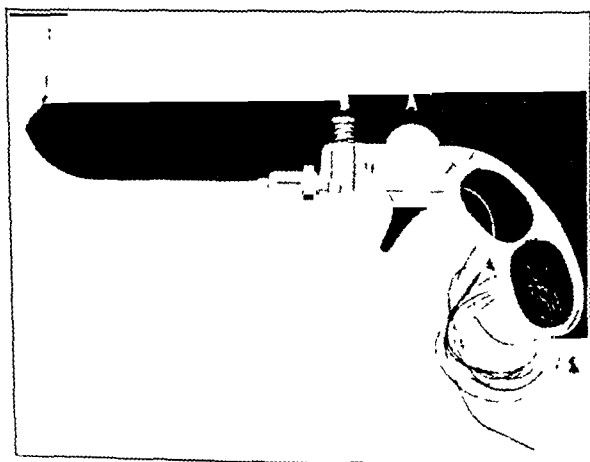
A case of pulmonary embolism, another of acute peripheral thrombosis and three cases of peripheral embolism were seen, in some of which a striking improvement of circulation resulted following the intravenous use of papaverine. The drug is an active antispasmodic and seems harmless in the doses recommended.

122 South Michigan Avenue

A NEW SUTURING NEEDLE

O. A. NELSON, M.D., SEATTLE

The needle herein pictured was devised to facilitate and expedite the placing of interrupted sutures. Furthermore, as it uses a single strand of sutural material this needle causes less traumatism than does a conventional type of needle. The



Suturing needle. A wheel for propelling sutural material. B knife for cutting it.

instrument consists of a hollow needle and handle which has a wheel for propelling and a knife for cutting the sutural material. Any sized catgut, dermal or silkworm gut can be used.

Its mode of operation is very simple. When the end of sutural material has been placed under the wheel in the handle and after the needle has been passed through the tissue to be sutured, the operator, by turning the wheel, forces the sutural

material out beyond the end of the needle. Then by grasping and holding the end of the sutural material and by withdrawing the needle, the operator, by pressing the knife, can sever the sutural material at a desired length. Thus interrupted sutures can be rapidly placed even in a deep cavity.

It was through the ingenuity of Mr. D. E. Selby, 2307 Walnut Street, Seattle, that I was able to have this instrument made.

1212 Medical-Dental Building

LEUKEMIA WITH THROMBOCYTOSIS

CARL B. DRAKE, M.D., ST. PAUL

An unusually high blood platelet count of more than 2,500,000 is the reason for this report.

A Scandinavian woman aged 65 was admitted to the Ancker Hospital in March 1935 because of recurrent extensive subcutaneous hemorrhages and shortness of breath on exertion. She had been in the same hospital five months before because of the same shortness of breath. This was thought to be due to a hypertension with slight decompensation and possibly a coexisting nephritis. In November 1934 the red blood cell count being 5,800,000 and the blood platelet count 1,000,000, venesection was performed at the Ancker dispensary with some subjective relief. Following this, subcutaneous hemorrhages began to appear and on one occasion a severe epistaxis.

On examination the patient's complexion suggested a polycythemia although it was not the typical brick red color. The lips were definitely cyanotic. There were large areas of subcutaneous hemorrhage over the sacrum and left shoulder, and at the center of each area was a pale tender nodule. The vision was poor, owing to a marked myopia, and the eye backgrounds showed areas of chorioretinitis attributable to the myopia, and the veins seemed a little prominent. The superficial veins of the neck were distended and the heart was definitely enlarged. This enlargement was confirmed by roentgen examination, which showed the heart to be 68 per cent of the chest diameter. Breath sounds were present at both lung bases but the roentgenogram showed cloudiness at both these areas. The liver was moderately enlarged and increased in consistency, and the spleen was palpable two fingerbreadths below the costal border. There was slight pitting of the ankles. The radial arteries were tortuous and sclerotic. The blood pressure was 190 systolic, 118 diastolic.

During the first week in the hospital, blood examinations showed the hemoglobin ranging from 70 to 84 per cent, red blood cells 4.5 to five million with many nucleated reds, white blood cells 22,000 to 33,000 with polymorphonuclear neutrophils 82 to 92 per cent, lymphocytes 7 to 11 per cent, mononuclears 2 to 5 per cent, eosinophils 1 to 2 per cent.

Further laboratory studies showed no increase in the fragility of the red cells. The blood urea was 23 mg., creatinine 1.5 mg., blood sugar 145 mg. The coagulation time was four minutes ten seconds and the bleeding time two minutes twenty seconds, both within normal limits. The urine was of normal specific gravity, the albumin varied from none to 2 plus, hyaline casts were reported occasionally and occasional white blood cells but no reds. Urobilin and urobilinogen were not present.

An Ewald test meal showed no free hydrochloric acid and 16 combined acidity.

During the patient's five months stay in the hospital repeated blood platelet counts by the usual dilution method showed figures from 1,000,000 to 2,580,000. At first an occasional megakaryocyte was the only abnormal white cell found. Toward the end of her stay in the hospital however the differential leukocyte count showed polymorphonuclear neutrophils 72 per cent, immature polymorphonuclear neutrophils 9, leukoblasts 4, stem cells 1, eosinophils 4, immature eosinophils 1 and lymphocytes 8 per cent.

Biopsy of a hemorrhagic nodule showed an organizing clot but no thrombosed vessel. Oozing and even brisk bleeding at the site of the biopsy lasted twenty-four hours and was quite distressing. For this reason a contemplated sternal puncture

was not carried out. Following the bleeding the erythrocyte count fell to 4,450,000 but subsequently returned to 5,440,000.

While the patient was in the hospital a strangulated femoral hernia necessitated operation, at which excessive bleeding was not encountered. Another severe epistaxis occurred while the patient was in the hospital and hematemesis of fresh and old blood following the biopsy.

COMMENT

The megakaryocytes have been definitely established as the source of the blood platelets. The number of platelets in the blood and megakaryocytes in the bone marrow usually correspond in conditions in which either is increased or decreased. Platelets have been found to be moderately increased following hemorrhage, in Hodgkin's disease and in chronic myelogenous leukemia. Increase has also been reported following liver therapy.

The platelet seems essential to coagulation but the platelet count is not an index of the coagulability of blood. Spontaneous hemorrhages do occur in the presence of high platelet counts, as in the case here presented.

A blood platelet count over 2 million seems to be rare. Epstein and Kretz¹ in 1930 reported a case in many respects resembling this one with a platelet count of 2,220,000 and an erythrocyte count ranging from 55 to 65 million, the leukocyte count being from 10,000 to 15,000 without evidence of leukemia. The bleeding time was increased (finger two minutes fifty seconds, ear, five minutes) and she had some bleeding of the gums and excessive bleeding following a tooth extraction which reduced the red blood cells to 3,800,000 and platelets to 800,000. In two years the erythrocyte count had returned to 5,400,000 and the platelets to over a million. The clotting time was not increased. These authors state that the only disease in which the blood platelets are greatly increased is erythremia and that several cases have been reported with counts of 700,000 and 800,000, also that the megakaryocytes have been found increased in the bone marrow in erythremia. They found that their patient had the most extraordinary and persistent platelet count encountered in the literature. They felt that the high red cell count warranted their classifying their case as an erythremia although the tendency to bleeding and headaches were not consistent with a typical erythremia. They were inclined to believe that their case represented a hitherto unknown disturbance of the bone marrow, which might be called a thrombocythemia. Later in the same year (1930) and the same journal Bode with reference to Epstein and Kretz's case mentioned a monograph by Weber and Bode on erythremia in which had been mentioned a disturbance of the bone marrow with megakaryocytes and platelets in the blood analogous to erythremia and leukemia.

Minot and Buckman² in an article on blood platelets report that platelets in seven of thirty-five cases of chronic myelogenous leukemia were persistently excessive ranging from 800,000 to 2,000,000, and that petechiae and even frank hemorrhages occurred even when the blood platelet count was high. Their experience was that the platelet count is low in the lymphatic type of chronic leukemia.

In another article, Minot³ called attention to the fact that megakaryocytes are found in the peripheral circulation and occasionally in large numbers. He had found them in myelogenous leukemia and in two cases of polycythemia vera and one of Hodgkin's disease. In one case of myelogenous leukemia, the megakaryocytes were present in the blood but no increase in platelets was found.

Downey says that megakaryocytes and increase in blood platelets can occur in polycythemia.

When the patient was first seen, the diagnosis in this case presented some difficulty. The blood platelets, red cells and myelocytes all being derived from the myeloblasts and the

blood picture showing an overproduction of platelets, red and white cells, the platelets showing the greatest increase, the question arose whether or not the condition was a new entity that could be called "thrombocythemia," a blood dyscrasia analogous to erythremia but distinct from leukemia, or should a case presenting this blood picture when first encountered be diagnosed megakaryocytic leukemia. The later appearance of premature white cells justified the diagnosis of myelogenous leukemia, a grave prognosis and the expectation of the development in time of the usual coexisting anemia. The clinical picture too, with subcutaneous hemorrhages, epistaxis and enlarged spleen and liver, is consistent with the diagnosis of leukemia. If observed long enough may not those other rare cases with very high platelet count, but no early white cells in the circulation, prove to be leukemia?

1235 Lowry Medical Arts Building

AUDITORY NERVE INVOLVEMENT AFTER TETANUS ANTITOXIN FIRST REPORTED CASE

RICHARD D. CUTTER, M.D., SAN FRANCISCO

A survey of the literature of toxic neuritis of various nerves due to the administration of tetanus antitoxin fails to reveal any report of involvement of the eighth cranial nerve. The following case is therefore of interest.

M. B., a white schoolboy, aged 14, admitted to the children's ward of Lane Hospital, Sept. 22, 1935, complained of irrationality and deafness occurring one week after the administration of tetanus antitoxin. The boy had always been in good health. About four and one-half weeks before admission he had stepped on a rusty nail in the barnyard. The wound was untreated, except for the application of iodine, and healed readily. Three weeks later he visited a physician because of twitchings in various muscle groups for one day and inability to open his jaw. Within a period of forty-eight hours he was given a total of 125,000 units of tetanus antitoxin intramuscularly, intravenously and intraspinally; the twitching subsided. Five days later (September 17) he was given an additional 1500 units of the antitoxin into the right pectoral muscle and a severe local reaction followed. During the next few days he complained of increasing deafness, noises in the ears and double vision. His neck became rigid, he was irrational at times and finally an itching urticarial rash developed.

At the time of admission he was seen to be very well developed with evidence of recent weight loss, weakness and exhaustion. The rectal temperature was 38 C (100.4 F). There was definite impairment of hearing. The jaw opened fully and the neck was not stiff. The region of the right pectoral muscle was reddened, tense and tender and there was marked limitation of motion of the right shoulder with weakness of the right arm. The original puncture wound caused by the rusty nail was entirely healed.

The blood count showed 5,990,000 red blood cells, hemoglobin 105 per cent (Sahli), 9,100 white blood cells with 50 per cent polymorphonuclear leukocytes, 30 per cent lymphocytes and 18 per cent eosinophils. The urine showed a trace of albumin. Examination of the stool was negative. The blood Wassermann reaction was negative.

An audiogram, September 23, showed approximately 40 per cent loss of hearing for speech on the right and approximately 50 per cent loss on the left. The temperature promptly fell to normal and during one week in the hospital the swelling and tenderness of the right pectoral region decreased markedly and the right arm regained its normal strength. The deafness increased however, and on September 26 the loss of hearing was 61 per cent on the right and 69 per cent on the left. The patient complained of bilateral tinnitus throughout his hospital stay.

He returned to his home, September 28, and was not seen again until November 7, at which time he was subjectively well and stated that the tinnitus and deafness had disappeared.

From the Department of Pediatrics, Stanford University School of Medicine.

¹ Epstein, Emil and Kretz, Johannes. Ueber ein Fall von hochgradiger Thrombocytenvermehrung. Klin. Wchnschr. 9: 1177 (June 21) 1930.

² Minot, G. R. and Buckman, T. E. The Blood Platelets in the Leukemias. Am. J. M. Sc. 169: 477 (April) 1925.

³ Minot, G. R. Megakaryocytes in the Peripheral Circulation. J. Exper. Med. 36: 1 (July) 1922.

Audiograms revealed a loss of hearing of approximately 9 per cent in the right ear and of approximately 21 per cent in the left

Doyle,¹ in tabulating forty-nine cases of neurologic complications of serum sickness, found that the brachial plexus was more frequently involved than any other portion of the nervous system. Next in frequency were neuritis of the radial nerve and optic neuritis. In the literature surveyed, none of the reports of neurologic accidents following administration of various antitoxins mentioned involvement of the eighth cranial nerve.

In the present case the occurrence of marked deafness during the course of serum sickness and subsequent recovery of almost normal hearing seem quite definitely to establish the diagnosis as nerve deafness due to the administration of tetanus antitoxin.

The transient weakness of the right arm during the course of the patient's illness might be interpreted as an involvement of the brachial plexus on the right due to serum administration but it seems more likely to have been a pseudoparalysis due to pain and tenderness at the site of the serum injection in the right pectoral region since the normal strength of the arm returned as the pectoral pain and swelling subsided.

2398 Sacramento Street

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS

HOWARD A. CARTER, Secretary

ANNUAL MEETING OF THE COUNCIL ON PHYSICAL THERAPY

The tenth annual meeting of the Council on Physical Therapy since it began to function was held at the Palmer House on Friday and Saturday, January 10 and 11. Dr. Harry E. Mock, Chicago, was reelected chairman and Dr. Frederick J. Gaenslen, Milwaukee, vice chairman.

A report was given of the work being done with the aid of research grants. Several recipients have published reports of their investigations. Recommendations were made as to types of research which the Council thought advisable to encourage during 1936. Applications for grants are available by writing to the secretary of the Council.

Postgraduate and undergraduate instruction in physical therapy was discussed. It was believed that one of the most feasible ways as demonstrated during the past years to acquaint the general practitioner with the simpler forms of physical therapy was through the medium of city, county and state medical meetings. Consultants on education and the Council's Committee on Education with its educational program. Consultants elected for 1936 are Drs. Bernard Fantus, Chicago; A. J. Kotkin, St. Louis; Richard Kovacs, New York, and Franklin P. Lowry, Newton, Mass.

Among the problems considered by the Council were the investigation of orthopedic appliances, shoes and posture equipment; the consideration of radium and radon compounds; the problem of a seal of acceptance; and the investigation of short wave machines.

When considering short wave machines submitted to the Council for investigation it was found that several machines would heat the deep lying tissues as well as conventional diathermy only if cuff electrodes were used and that the pad electrodes were not as efficient. Therefore it was thought best to require that the manufacturer of these machines (accepted solely on the basis of their performance with cuff electrodes) furnish cuff electrodes as standard equipment and the manufacturers have expressed their willingness to comply. Several manufacturers furnish air spaced electrodes with their machines but so far no manufacturer has submitted conclusive evidence that these electrodes are efficacious.

In the investigation of spectacle lenses and ophthalmologic devices, the Council has been assisted by the Committee on Standardization and Drugs of the Section on Ophthalmology of the American Medical Association and a report of the work was submitted by that committee.

It was reported that the revised, second edition of the Handbook of Physical Therapy will be printed in a short time, and that the pamphlet Apparatus Accepted will be brought to date later.

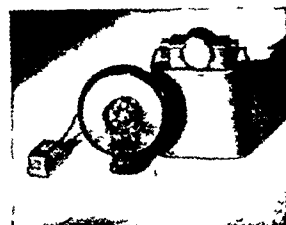
ACOUSTICON ACCEPTABLE

Manufacturer: Dictograph Products Company, Inc., New York.

The manufacturer states that the Acousticon is "an electrical device suitable for use by an individual whose hearing efficiency has been lowered appreciably. It constitutes a method of reinforcing by electrical amplification sound energy which is normally too weak to permit audition."

It is made in such a form that it can be carried on the person and it is adjustable to the momentary needs of the user. Its source of electrical energy is dry cell batteries enclosed in a sealed container.

Fundamentally the instrument consists of a transmitter constructed not unlike a telephone transmitter, so that it responds to very weak sounds, reproducing them with reinforcement in certain tone ranges. Each model transmitter has a maximum reinforcement in different tone ranges. This microphone is connected by light electrical cordage to the battery and also to a receiver. Two fundamental types of receivers are supplied, the conventional air conduction and bone conduction. The air conduction receivers are made in two sizes, regular and midget, the latter being fitted with a molded insert which fits the recess of the external ear, projecting slightly into the canal. These molded pieces are fastened to the receiver with a snap connector making easy removal for cleaning possible.



Acousticon

In some models of the Acousticon an amplifying device is used between the microphone and the receiver which intensifies the electrical impulses generated by the microphone delivering to the receiver a substantially increased electrical signal.

The volume response characteristic for tones throughout the range of speech frequencies is different in each instrument model. This characteristic is determined almost entirely by the transmitter and ear piece combination and can be adjusted by such combination to suit the requirements for satisfactory audition by various individuals. Instrument combinations provide different degrees of amplification in the essential portions of the tone range.

All metal on the exterior of the instrument is suitably japanned or finished to eliminate any effect on the skin of the user, and all nonmetallic parts are of molded bakelite, rubber and silk.

Hearing aids are usually of considerable aid in cases of middle ear or conduction apparatus impairment. However, when there is marked impairment of the auditory nerve or perception apparatus, the assistance derived varies according to the individual condition and in extreme cases no benefit is gained.

The unit was tested under actual conditions by an investigator selected by the Council and was found to be generally satisfactory.

The special batteries used with this unit are distributed solely by the firm. The Council feels that the manufacturer would serve the hard of hearing better by adopting this unit to standard flashlight batteries which could be accomplished by supplying a case to hold standard flashlight cells for it believes it is more important to be able to replace the batteries readily and cheaply than to have special batteries giving slightly longer service which are not often quickly obtainable. Furthermore in the case of special hearing-aid batteries, the Council feels that

the battery terminals should be standardized so that a battery, no matter where purchased, will fit all makes of hearing aids.

When these devices are prescribed, in the opinion of the Council, the Company should permit the patient to try them and be certain that they will fit his specific type of deafness under the particular circumstances in which he is most desirous of aid.

In view of the results of the investigation of this unit, the Council voted to include the Acousticon in its list of accepted devices.

UNIVERSAL BOVIE UNIT ACCEPTABLE

Manufacturer The Liebel-Flarsheim Company Cincinnati

This unit is designed for electrosurgery and for medical diathermy. It is a spark gap type and is equipped with a selector switch, multiple connections for operating instruments and sterilizable control handles. Its shipping weight is unit 111 pounds, subcabinet 69 pounds. This unit is claimed to be ground free and shock proof. All currents pass through a special filter circuit designed to eliminate the possibility of faradic or other shocking currents being transmitted to patient or operator. Its frequency is approximately 1,000,000 cycles per second (wavelength 300 meters). The power required to operate the unit at full load is about 390 watts. Figure 2 is a diagram of the circuit.

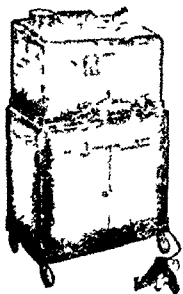


Fig 1—Universal Bovie Unit

The manufacturer submitted evidence pertaining to the electrical and physical characteristics of the unit. The data indicated that the temperature rises of the transformer and spark gap after a run at full load for one hour were within the limits adopted by the Council. The Council's investigator reported that the unit was well made and that good material appeared to have been used in its manufacture.

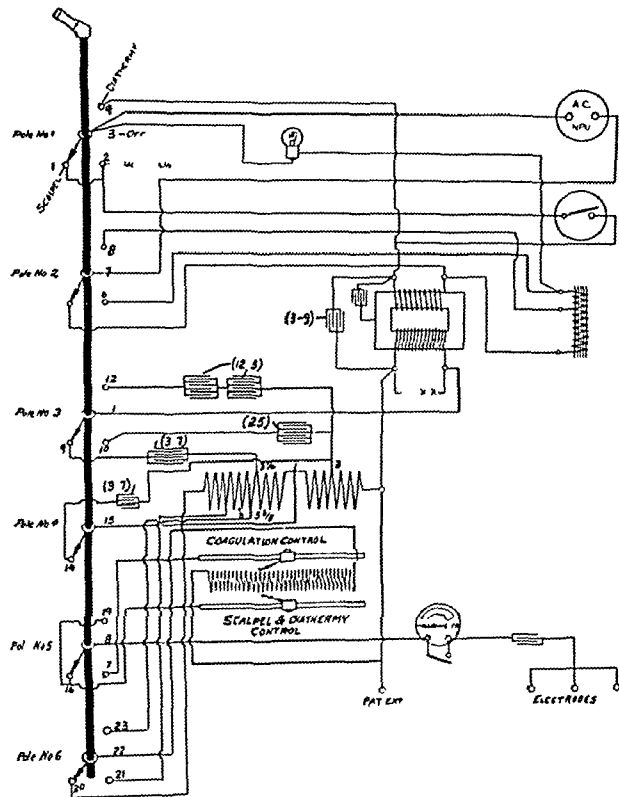


Fig 2—Schematic diagram of the circuit

The performance of the apparatus was satisfactory when used for seven months in a clinic acceptable to the Council.

In view of the favorable report of the investigator, the Council on Physical Therapy voted to include the Universal Bovie Unit in its list of accepted devices.

EDMANDS ELECTRIC BAKER ACCEPTABLE

Manufacturer Walter S Edmands, 135 Columbus Avenue, Boston

This heating unit is a useful and simple method for applying heat therapeutically to the body.

It consists of a number of incandescent lamps so wired and controlled as to produce three different degrees of heat. The lamps are spread under two curved aluminum reflectors, which are hinged together. The device may be adjusted so that it may fit around an arm or a leg and the larger sizes will fit around a back. From six to twenty-four 60 watt lamps operate on either alternating or direct current. The shipping weight varies according to size, from 10½ to 30 pounds.



Edmands Electric Baker

One model of the Edmands Electric Baker was tried out in an acceptable clinic and found to be satisfactory for the application of local heat to the extremities. The device seems well suited for the maintenance of luminous and heat radiation of maximum tolerance around curved body surfaces, such as an arm or a leg.

In view of the favorable report, the Council on Physical Therapy voted to include the Edmands Electric Baker in its list of accepted devices.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING STATEMENT AND REPORT

PAUL NICHOLAS LEECH Secretary

THE NEW ERGOT ALKALOID "ERGONOVINE"

During the past year, communications from four laboratories have been published reporting the isolation of a new oxytocic alkaloid from ergot. Until recently there has been doubt as to whether or not the principles reported by these laboratories were identical (termed 'Ergotocin' by Kharasch, 'Ergometrine' by Dudley and Moir, 'Ergobasine' by Stoll, and 'Ergostetrine' by Thompson). In a jointly signed statement (*Science* February 28) Kharasch, King (acting for Dudley), Stoll and Thompson say there is 'no doubt that the alkaloid obtained in the four different laboratories was the same substance.'

It is necessary, therefore, that a suitable nonproprietary name which is not therapeutically suggestive be adopted for the new alkaloid. Not one of the several names that have been proposed by the discoverers complies with these requirements. The Council on Pharmacy and Chemistry of the American Medical Association, in session March 14, therefore determined to adopt the new, nonproprietary, name 'Ergonovine' (ergo nov ine). The Council concedes to the discoverer of a product the right to the use of a proprietary name. It cannot, however, accept more than one proprietary name because of the confusion to which such practice gives rise. In the present case several different names have been proposed. It seems impossible to establish undisputed priority. The Council has decided therefore that it would recognize no proprietary name.

AMPOULE CALCIUM CHLORIDE 10% (LAKESIDE LABORATORIES, INC) OMITTED FROM N N R

In 1929 the Council placed Ampoule Calcium Chloride 10% (Lakeside Laboratories, Inc) on the list of 'Exempted Medical Articles as being a pharmacopoeial article marketed under a descriptive, nonproprietary name with well established therapeutic claims. In 1932 the name of this list was changed to "List of Articles and Brands Accepted By the Council But Not

Described in N N R" The product was reaccepted for inclusion in this list in 1933

The second period of acceptance expired with the close of 1935 and, in accordance with its usual custom, the Council considered the eligibility of this product for continued recognition. In view of the fact that a less irritant calcium preparation such as calcium gluconate is now available, it was questioned whether the Council should continue recognition of so concentrated a solution of the admittedly irritant and, in the hands of the unskilful, possibly dangerous calcium chloride for intravenous use.

After due consideration the Council voted to omit Ampoule Calcium Chloride 10% (Lakeside Laboratories, Inc.) from the List of Articles and Brands Accepted By the Council But Not Described in N N R

Committee on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.



FRANKLIN C BING, Secretary

ADVERTISING LEAFLET 'MEL-O-TOSE NO 1 WHAT IS IT? AND WHAT IS IT GOOD FOR?'

Sponsor—Food Concentrates, Inc., New York

Advertising leaflet for distribution to physicians containing analysis of Mel-O-Tose No 1 and formulas for Mel O-Tose Nos 2, 3 and 4, and discussing nutritional and therapeutic values of dried ripe banana

SOLITAIRE BRAND GRAPE JUICE

Distributor—The Morey Mercantile Company, Denver

Manufacturer—Church Grape Juice Company, Kennewick, Wash

Description—Bottled, processed Concord grape juice, the same as Church's Concord Grape Juice (THE JOURNAL, Aug 10, 1935, p 437)

ADVERTISING BOOKLET FOR OCEAN CLEAR LOBSTERS

Illustrated booklet prepared by S A Conover Company, Boston advertising agency, for the Consolidated Lobster Company, Gloucester, Mass, descriptive of conditions under which Ocean Clear Live Lobsters are caught stored and shipped. Contains brief statement of the nutritive value of lobsters, directions for handling live lobsters and recipes for lobster dishes

PEARLS OF WHEAT

Manufacturer—Albers Brothers Milling Company, Seattle

Description—Wheat flour middlings or farina containing from 15 to 2 per cent of wheat germ

Manufacture—Wheat flour middlings containing from 15 to 2 per cent of wheat germ is bolted, heated to destroy any insect infestation and packaged

Analysis (submitted by manufacturer)

	per cent
Moisture	90
Ash	05
Fat (ether extraction method)	13
Protein (N X 5.7)	82
Crude fiber	04
Carbohydrates other than crude fiber (by difference)	80.6
Wheat germ content (germ picked out by hand)	15 to 2

Calories—37 per gram 105 per ounce

Claims of Manufacturer—A breakfast cereal For infant feeding under the direction of a physician

CARNATION YEAR BOOK OF MENUS AND RECIPES

Sponsor—Carnation Company, Milwaukee

Description—Advertising booklet prepared by the Erwin, Wasey and Company advertising agency. A recipe book containing brief statements of food value of Carnation Milk and special advantages for use in infant feeding. The menus and recipes are arranged with reference to foods available at different seasons of the year

ABSOPURE BRAND CALIFORNIA ORANGE JUICE

Manufacturer—Absopure Fruit Products, Inc., Anaheim, Calif

Description—Canned flash-pasteurized California Valencia orange juice practically equivalent to fresh orange juice in vitamin C content

Manufacture—Tree ripened Valencia oranges are washed, inspected for removal of inferior or defective fruit, and automatically halved and reamed. The juice is screened to remove seeds and coarse pulp, passed through a 'finisher' to remove everything but the finest pulp flash-pasteurized at 71 C for from two to three minutes, filled hot into enamel-lined cans sealed, and heat processed for from three to five minutes. The trees are not sprayed with arsenical sprays

Analysis (submitted by manufacturer) —

	per cent
Moisture	87.0
Total solids	13.0
Ash	05
Fat (ether extract)	01
Protein (N X 6.25)	10
Reducing sugars as invert sugar	5.9
Sucrose	3.1
Crude fiber	0.03
Carbohydrates other than crude fiber (by difference)	10.3
Titratable acidity as citric acid	1.1

Calories—0.5 per gram, 14 per ounce

Vitamins—Vitamin C—Chemical titration shows the canned product to be practically equivalent in cevitamic acid (ascorbic acid) to fresh juice

Claims of Manufacturer—Practically equivalent to fresh orange juice in vitamin C content. For all dietary and table uses

AMERICAN LADY BRAND APPLE SAUCE TOPMOST BRAND APPLE SAUCE

Distributor—General Grocer Company, St Louis

Packer—Lyndonville Canning Company, Inc., Lyndonville, N Y

Description—Canned apple sauce prepared from peeled and cored apples with added sucrose. The same as VB (Visscher Brothers) Old Fashioned Apple Sauce (THE JOURNAL, Aug 6, 1932, p 476)

ALLSWEET BRAND OLEOMARGARINE (CONTAINS 1/10 OF 1% OF BENZOATE OF SODA)

Manufacturer—Swift & Company, Chicago

Description—Margarine prepared from oleo oil, skim milk, neutral lard, peanut or cottonseed oil, salt and sodium benzoate 0.1 per cent, or hydrogenated cottonseed oil, skim milk, cottonseed oil, salt, oleo oil and sodium benzoate 0.1 per cent, or hydrogenated cottonseed oil skim milk, cottonseed oil, salt and sodium benzoate 0.1 per cent

Manufacture—The fats and oils are melted and churned with pasteurized cultured skim milk. The resulting emulsion is solidified by chilling, allowed to stand for sixteen hours at 21 C for the development of flavor, salt is worked in and excess moisture removed. The margarine is either packed in tubs or moulded into blocks and automatically wrapped and packed in cartons

Analysis (submitted by manufacturer) —

	per cent
Moisture	13.0 15.0
Sodium chloride	3.0 3.5
Fat (ether extract)	80.0 82.8
Protein (N X 6.25)	0.6 0.7
Lactose	0.6 0.8

Calories—From 7.2 to 7.4 per gram from 204 to 210 per ounce

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SATURDAY, MARCH 21, 1936

ERYSIPELAS

In a survey of the hospital records of 1 400 patients with erysipelas, Kcefer and Spink¹ found the general mortality to be 16.4 ± 3.6 per cent. The mortality varied from year to year between 9.3 and 21 per cent. When the records were studied for factors that might account for the yearly fluctuations, it was found that the age of the patient, the presence of debilitating diseases and the occurrence of bacteremia were important. Thus the death rate is exceedingly high during the first two years of life, after that period the mortality is low until after the fifth decade when there is a rapid increase. Almost any debilitating disease, it seemed, may be an important contributing factor in erysipelas. In a series of thirty patients recently studied, all of whom recovered, bacteremia was observed only once. In another group of thirty-nine fatal cases, bacteremia was present in thirty-one before death. The yearly variation in mortality could therefore be explained for the most part on the basis of the variation in these three factors.

As a part of an investigation of the various serologic reactions that occur during and after hemolytic streptococcus infections, Spink and Keefe² studied thirty patients with erysipelas. They investigated the antistreptolysins (antihemolysins), antifibrinolysin and streptococcal power of the whole defibrinated blood. In addition, the complement of the blood serum was titrated, agglutination reactions against the organism derived from the patient and the skin reactions to "Dick" toxin and streptococcus nucleoprotein were investigated. All the patients were studied while they were under observation in the Boston City Hospital. After the illness had subsided and after discharge from the hospital the patients were followed for periods of from one to eight months. B hemolytic streptococci

were isolated from all the patients studied. When it was not possible to obtain the organisms directly from the lesion, they could be obtained from the nasal secretions.

The antistreptolysin titer of the blood serum was determined by the method of Todd. The titer was found increased during the course of the disease and frequently remained above the original titer for periods of from forty days to six months. The highest titer was usually reached within the first twenty days after the onset of the illness. The method of Gillett and Garner was used in testing for antifibrinolysin. Twenty-five of the thirty patients developed maximum resistance to fibrinolysin within five to fourteen days of the illness. Once the resistance appeared, it persisted for periods varying from eight to 150 days. While there was no precise correlation between the appearance of maximum resistance and recovery, Spink and Keefe considered this reaction a response on the part of the host to streptococcal infection. The streptococcal action was studied in the whole defibrinated blood by the method of Todd. During the course of the disease, the streptococcal power may be increased or remain stationary. Increases in killing power, however, could not be correlated with recovery. The titer of the complement of the patient's blood serum was determined at different times during the course of the disease. This was done by adding different amounts of the patient's blood serum to 0.5 cc of sensitized sheep cells and placing the mixture in a water bath at 37 C for an hour. The smallest amount of serum that was required to effect complete hemolysis of 0.5 cc of sheep cells was taken as the amount of complement present. The results of these tests varied widely. In general, however, there was an adequate amount of complement present for phagocytosis. Also skin tests were performed. Only one of the thirty patients reacted positively to Dick toxin, although twenty-four showed positive reactions to 0.1 mg of the nucleoprotein of hemolytic streptococcus. Three patients developed agglutinins against their own organisms in titers varying from 1:40 to 1:80. Two of the three patients had suppurative complications.

In view of the multiple serologic reactions demonstrable in patients with hemolytic streptococcus infection, it is difficult to decide which responses are the more important in bringing about recovery. Recovery probably results from a summation of a variety of responses that are capable of keeping the infectious process localized and destroying or limiting the growth of the organisms in the tissues. Of these reactions, according to Spink and Keefe, the presence of antibodies that aid in the phagocytosis and destruction of the organism seem to be of the greatest importance. The complex nature of the problem of immunity and recovery in a streptococcal infection such as erysipelas is well illustrated by these contributions.

1 Keefe C S and Spink W W. Studies of Hemolytic Streptococcal Infection. I. Factors Influencing the Outcome of Erysipelas. J Clin Investigation 15: 17 (Jan) 1936.

2 Spink W W and Keefe C S. Studies of Hemolytic Streptococcal Infection. II. The Serologic Reactions of the Blood During Erysipelas. J Clin Investigation 15: 21 (Jan) 1936.

PSYCHOGENIC FACTOR IN ASTHMA

There are certain cases of asthma, Strauss¹ says, which for various reasons (e g, the mode and age of onset or the inability to demonstrate sensitivity to any special allergens) appear to be predominantly psychogenic in the sense of "complex determined." With this view scarcely any one will disagree especially when qualified by repeated emphasis of the fact that one cannot talk correctly about "true asthma" and "psychogenic asthma," implying thereby that psychic mechanisms play no part in one and are solely causal in the other. An attempt to evaluate the psychogenic factor has, however, been begun at Guy's Hospital and is the subject of two recent preliminary reports.

In the report by Rogerson² and his co-workers it was shown that, when patients with this symptom complex and their environment were considered from the psychiatric point of view a number of interesting facts emerged which showed that the psychologic quality of the environment was just as important to these children as its physical components. The patients referred for psychologic investigation were predominantly children. Some were asthmatic without skin symptoms, some showed both asthma and prurigo-eczema, while in one or two cases the skin condition was the point of emphasis.

The intelligence of the group was above the average not only for the hospital class but for the general population. The position in the family was striking. Of the group of twenty-three children seven were the only child, six were the eldest child while four were the first boy in the family. Partly on this account and partly because of other factors a large proportion of the children had to contend with a difficult environment. No less than seventeen of the children were fussed and overprotected by their parents to a pathologic degree. This abnormality was so great that one might feel that if these children had not been brought to the hospital with asthma or prurigo they might easily have been referred on account of the nervousness engendered in them by their situation. By comparison in only two of the cases was the difficulty primarily one of jealousy of a younger child, normally another common cause for nervousness in child guidance practice.

The most interesting feature of these cases taken as a group was their uniformity of behavior. It was both overanxious and insecure and was shown by the majority of the children. This was often reflected in the personality of the parents which in many cases resembled that of the children in being overanxious and insecure and which might therefore be expected to arouse a similar response in the children.

Strauss feels that the children fall into two groups (1) children who have been very much 'wanted' by

their parents (only children, the first boy to be born in a family of girls, or vice versa and so on), and (2) "unwanted" children whose parents are overcompensating for their secret (possibly unconscious) emotional disposition to the child by fussiness and spoiling. He then considers two possible "causes" of asthma that in which the asthmatic attack is to be regarded as crudely purposive in character and that in which the asthmatic attack is infantile-libidinally determined in the strict Freudian sense. The following questions have therefore to be decided: 1 'Is asthma crudely a purposive hysteria, in the sense of its being an attempt to solve a current conflict by neurotic means?' 2 Is asthma in a more subtle sense complex or libidinally determined? 3 Is asthma to be regarded as representing a disturbance at a 'psychoid' rather than a psychic level? 4 Is an asthmatic attack to be regarded primarily as the perverted end result of a chain of conditioned reflexes? 5 Do distorted, emotionally colored fantasies of respiratory functions combine with the allergic diathesis to produce asthma?" Apparently the answers to these five questions are most likely to be forthcoming if young asthmatic children are selected for research purposes, and the best method of investigation centers around observation of their play. It is probably not only in play, however, that a child can realize its preconscious and subconscious mental life and psychoid processes in a manner that may become clear to itself and to an unbiassed but trained observer. Further investigation of the asthma problem seems to require a "play technique" that takes stock of extremist points of view.

The fascinating and important studies begun in the work reported in these two papers should, at the least, lead to much better understanding of some factors in the asthma-prurigo syndrome which are so frequently found baffling.

NUTRITIONAL SIGNIFICANCE OF ZINC

More than twenty years ago, in one of their classic papers on the relation of growth to the chemical constituents of the diet, Osborne and Mendel¹ wrote "The animal cells need for their activities not only energy but also suitable constructive materials to replace the wear and tear therein. Furthermore, the cells are concerned in the elaboration of a great diversity of complex and little understood substances such as enzymes, products of internal secretion, etc., which unquestionably play an indispensable role in life and may require either special antecedent products for their construction chemical activators of some sort, or minute quantities of readily overlooked rarer elements and compounds." These pioneer studies indicated that much better growth was obtained in the experimental animals when traces of iodine, manganese, fluorine and aluminum were added to the artificial salt mixture originally made to resemble the ash content of milk.

¹ Strauss F B. The Psychogenic Factor in Asthma. Guy's Hosp Rep. 85: 209 (July) 1935.
² Rogerson C H, Hardcastle D H and Duguid K. A Psychologic Approach to the Problem of Asthma and the Asthma Eczema Prurigo Syndrome. Guy's Hosp Rep. 85: 289 (July) 1935.

The importance of these investigations was not immediately recognized but the striking demonstration a short time later of the efficacy of small quantities of iodine in the prevention and cure of endemic goiter served to emphasize the need for adequate knowledge regarding the indispensability or even the minimum requirement of any of the inorganic constituents of the dietary. Investigators of the past fifteen years have demonstrated the undisputed importance of mineral elements in the diet. Copper, iron, magnesium, calcium and phosphorus are among the minerals that have been established as being of definite nutritional significance.

The efforts to secure undisputed evidence for the nutritional role of any particular element are attended with much experimental difficulty. This is particularly true when the mineral in question may be required by the animal in only small amounts, the experimental approach, therefore, involves the removal from the diet of every possible trace of the element to be studied. This technic has proved extremely difficult and laborious in some instances, and development of definite knowledge of the possible role of many of the elements in nutrition has awaited the refinement of laboratory procedures. This fact is aptly illustrated by the available information regarding zinc in nutrition.

In 1927 Hubbell and Mendel² reported a careful study of the zinc content of some common foods, of the effect of the metal on the growth of white mice, and of the relation of the zinc content of mice to their diet. These investigations definitely supported earlier results which demonstrated that zinc is commonly present in small amounts in foods of both plant and animal origin. A zinc-low ration was prepared which permitted the ingestion of only 0.005 mg. of zinc by each animal daily. The growth of mice on this diet was slightly retarded when compared to that of control animals. More striking evidence for a possible significant role of zinc in nutrition was obtained by the favorable effects exerted by small amounts of zinc sulfate added to the zinc-low ration. The results were not definitely conclusive but there appeared to be a slight stimulation in growth evidenced in animals receiving the zinc supplements. It seemed not unlikely that there is some variation in growth with varying amounts of zinc and that the metal is not merely an accidental factor in the nutrition of the mouse. Adequate confirmation of this suggestion is now available from two laboratories.

Investigators at the University of Wisconsin³ have made careful studies of the indispensability of zinc in the nutrition of the rat. By special refinements in technic it was possible to reduce the zinc intake to a level at which the lack of this element was manifested by a definite retardation in growth and a regular interference with the development of a normal coat of hair.

Both these unfavorable conditions could be alleviated by the addition of small amounts of a zinc salt to the purified ration. The supplement inaugurated a resumption of normal growth rate and a restoration of the thin woolly hair coat to normal. This demonstrated importance of zinc in nutrition is amply confirmed in another species by the studies of Bertrand and Bhattacharjee⁴ in Paris. Working with a ration slightly lower in zinc content than that of Hubbell and Mendel, the French investigators have demonstrated that mice placed on a synthetic diet containing less than 0.5 mg. of zinc per kilogram died in from fourteen to twenty-three days. Control litter mates ingesting a similar diet supplemented to the extent of 20 parts per million of zinc lived from fifty-seven to seventy-four days. The preponderance of evidence, therefore, indicates that zinc is an essential element in the nutrition of the rat and the mouse. Although experiments have not been conducted with other animals, it seems possible that zinc plays an important part in the nutrition of all animals. It is hardly necessary to point out that the difficulties encountered in preparing a zinc-free ration suggest that most natural diets contain sufficient amounts of this element. However, it is only by a virtually complete elimination of substances normally necessary in minute amounts in the diet that correct evaluation of their function can be obtained. Although the manner in which zinc affects the body is still unknown, the establishment of its essential nature stimulates investigations designed to determine the manner in which the element may function. The interesting observation of Scott⁵ that his highly purified crystalline insulin contains traces of zinc firmly bound in the hormone molecule are suggestive at this time, even though a definite interpretation cannot yet be made.

Current Comment

"ERGONOVINE"

Last year the isolation of a new alkaloid from ergot was reported within a relatively short period from four different laboratories, two in the United States, one in England and one in Switzerland. The new substance was found in each case to be different in its properties from the previously known alkaloids of ergot, its oxytocic effects were much more prompt and more lasting than those of ergotoxine or ergotamine and the required dosage was smaller. Some discrepancies in the reported physical and chemical properties of the material isolated by the different investigators led to doubt as to the identity of the four products, four names were proposed, ergometrine (Dudley and Moir), ergotocin (Kharasch and Legault), ergobasine (Stoll and Burckhardt) and ergostetrine (Thompson). Owing to the confusion entailed by the doubt as to the identity of the four products so designated, workers in the four laboratories commendably agreed to exchange

² Hubbell R. B. and Mendel L. B. *J. Biol. Chem.* **75** 567 (Nov.) 1927.

³ Todd W. R., Elvehjem C. A. and Hart E. B. *Am. J. Physiol.* **107** 146 (Jan.) 1934. Stern F. E., Elvehjem C. A. and Hart E. B. *J. Biol. Chem.* **109** 347 (April) 1935.

⁴ Bertrand Gabriel and Bhattacharjee R. C. *Compt. rend. Acad. sc.* **198** 1823 1934. *Bull. Soc. scient. d'hyg. aliment.* **23** 369 1935.

⁵ Scott D. E. *Biochem. J.* **28** 1592 (No. 4) 1934.

specimens and to compare the various products Kharasch, King (acting for the late Dr Dudley), Stoll and Thompson¹ have now reported that their "comparisons of the melting points and mixed melting points of the four alkaloids and of certain of their salts, and of their optical activities in different solvents in cases where sufficient material was available, leave [them] in no doubt that the material obtained in the four different laboratories was the same substance, and that the four names given to it are synonyms." Elsewhere in this issue (page 1008) the Council on Pharmacy and Chemistry reports the adoption at its annual session on March 14 of a new nonproprietary name for this alkaloid, "ergonovine." This new term was chosen instead of one of those already proposed because of the difficulty of determining priority and because of possible conflict of the other names with the policy of the Council governing nomenclature. The agreement among the investigators concerned as to the identity of the alkaloid and the adoption of a single name to replace the four previously in use (and others employed in addition by commercial firms) should now prevent further confusion.

Association News

THE KANSAS CITY SESSION

Distinguished Foreign Guests

Among the distinguished physicians from other countries who will attend the annual session of the American Medical Association to be held in Kansas City Mo. are Lord Horder of Ashford London, England, Dr Afranio do Amaral of Instituto Butantan, São Paulo, Brazil and Dr Francisco Miranda Mexico City, Mexico.

Lord Horder and Dr Amaral will take part in the program of the General Scientific Meetings on Tuesday, May 12. Lord Horder and Dr Miranda will each present a paper before the Section on Practice of Medicine.

RADIO BROADCASTS

The American Medical Association broadcasts over WEAf, the Red network instead of the Blue as formerly, and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time 2 o'clock Pacific time) each Tuesday presenting a dramatized program with incidental music under the general theme of Medical Emergencies and How They Are Met. The title of the program is Your Health. The program is recognizable by a musical salutation through which the voice of the announcer offers the toast Ladies and gentlemen Your Health! The theme of the program is repeated each week in the opening announcement which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community day and night for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

Red Network—The stations on the Red network of the National Broadcasting Company are WEAf WEEI WTIC WJAR WTIG WCSH KYW WGBR WRC WGY, WBLA WCIE WTAM WWJ WMAQ KSD WHO WQW WDAF.

Pacific Network—The stations on the Pacific network are KGO KPO, KFI KGW, KOMO KHQ KFSD KJAR.

Network programs are broadcast locally or omitted at the discretion of the local station. The lists indicate stations to which programs are available.

The next three programs are as follows:

March 24	Hay Fever and Asthma	Morris Fishbein M.D.
March 31	Let Your Doctor Decide	W. W. Bauer M.D.
April 7	Middle Age	R. G. Leland M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ALABAMA

Personal—Dr. William D. Burkhalter, Nashville, Tenn., was recently appointed health officer for the newly organized health department of Coosa County, with headquarters at Rockford.—Dr. Robert E. Harper, Moulton, has been named health officer of Colbert County, succeeding Dr. George W. Warwick, Birmingham.

ARKANSAS

Society News—The Mississippi County Medical Society was addressed, February 4, by Memphis physicians. Clement H. Marshall on pruritus, Matthew W. Seagriff, menstruation, Shields Abernathy, cancer of the breast, and Dr. Joseph C. Beasley, Blytheville, management of a ruptured appendix.—At a meeting of the Sebastian County Medical Society, February 11, Drs. Clarence B. Billingsley and Ralph E. Weddington, Fort Smith, discussed "Puerperal Sepsis: Prognosis and Treatment."—The Benton County Medical Society was addressed at Bentonville, February 13, by Drs. William A. Moore and Clyde L. McNeil, both of Rogers, on undulant fever and syphilis, respectively.—Dr. Henry B. Hull, Mammoth Spring, discussed pneumonia before the Lawrence County Medical Society at Imboden, February 11.

CALIFORNIA

Personal—Dr. Alexis Carrel of the Rockefeller Institute for Medical Research, New York, delivered the sixty-eighth charter day address on the Los Angeles campus of the University of California, March 20. Dr. Carrel was recently appointed Hitchcock professor at the University of California in Berkeley for the spring semester.—Dr. Robert A. Peers Colfax, president of the California Medical Association, was made an honorary member of the Stanislaus County Medical Society at a recent meeting in Modesto, in honor of his sixtieth birthday.—Dr. Edwin S. Bennett, Olive View, has been appointed superintendent of Olive View Sanatorium, succeeding the late Dr. William H. Bucher.

San Francisco's Health—Heart disease, the leading cause of death in San Francisco, was responsible in 1935 for 2,491 deaths, giving the highest rate on record, 359 per hundred thousand of population. A rate of 172.87 per hundred thousand of population was noted for cancer. The general mortality rate for the city was 12.34 and the infant mortality rate 35 per thousand live births. The birth rate was 10.28 per thousand of population and the maternal death rate was 4.6 per thousand of all births. Pulmonary tuberculosis showed a rate of 58.58. The highest rate ever recorded for diabetes mellitus was made 29.72 per hundred thousand of population. There were 123 deaths from automobile accidents giving a rate of 17.74. Four deaths were reported for diphtheria as compared with one death in 1934. No cases of smallpox were reported. A death rate of 6.2 was recorded for influenza.

COLORADO

Society News—At a meeting of the Otero County Medical Society in La Junta, February 13, Drs. James B. Walton and Daniel R. Higbee, Denver, spoke on "Diseases of the New-Born and Kidney Infections," respectively.—Dr. Wilton A. Day, Delta, discussed vitamins before the Delta County Medical Society in Delta, February 28.—A symposium on cancer of the female genital tract was presented before the Pueblo County Medical Society, March 3, by Drs. Gerrit Heusinkveld, Kenneth D. A. Allen and George Zur Williams, all of Denver.—The Medical Society of the City and County of Denver was addressed, March 3, by Drs. Arthur J. Markley on Jonathan Hutchinson—The General Specialist and Edward Jackson, Pioneers in Ophthalmology.

¹ Kharasch, M. S., King, H., Stoll, A. and Thompson, M. J. The New Ergo Alkaloid. *Science* 82: 206 (Feb.) 1936.

DISTRICT OF COLUMBIA

University News—Dr Esmond R Long, director of the Henry Phipps Institute, Philadelphia, gave the fifth lecture in the Smith-Reed-Russell series at the George Washington University School of Medicine, February 18, his subject was "Types of Pulmonary Tuberculosis in Relation to Spread of the Disease." Philip Bard, Ph D, Baltimore, gave the fourth lecture in the series, January 16, on "Neural Bases of Certain Forms of Emotional Expression."

Personal—John C Merriam, Ph D, president of the Carnegie Institution of Washington, was presented with the American Institute's gold medal, February 6 for his discoveries in paleontology, his effective promotion of research and his recognition of the place of science in human affairs.—Dr Frank Leech was honored at luncheon, January 14 in observance of his sixty-fifth birthday. A book of testimonials was presented to Dr Leech, signed by about eighty-two friends and associates present at the luncheon.

Society News—At a meeting of the Washington Society of Pathologists, January 4, papers were presented by Dr Laszlo Detre on "Growth-Temperature and Antigenic Constitution of B Typhosus" and Joseph F Siler, "Recent Investigation of Typhoid Vaccine at the Army Medical School."—Speakers before the Washington chapter of the Pan American Medical Association at its meeting January 26 included Drs John J Moorhead, New York, and William Wayne Babcock, Philadelphia, on "Trends in Traumatic Surgery" and "Diagnosis and Treatment of Diseases of the Colon" respectively.—Dr Mervin W Glover addressed the Louis Mackall Society recently on "Treatment of Epidemic Meningitis" and Dr Harry F Dowling, "Postoperative Pneumonia Cause, Prevention and Treatment."

Medical Bills in Congress—H R 11692, introduced (by request) by Representative Norton, New Jersey, proposes to establish a Commission on Mental Health to examine alleged insane persons and to make reports and recommendations to the court concerning the treatment, commitment and payment of the expense of support and maintenance of insane persons. The House Committee on the District of Columbia has voted to report the bill with recommendation that it pass. H R 11695, introduced by Representative Brewster, Maine and S 4195, introduced by Senator White, Maine propose to direct the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art to Dr Ralph Charles Stuart. H R 11717 introduced by Representative Lemke, North Dakota, proposes that no form of vaccination or inoculation shall hereafter be made a condition precedent in the District of Columbia for the admission to any public or private school or college of any person or for the exercise of any right, the performance of any duty, or the enjoyment of any privilege by any person.

ILLINOIS

Society News—Dr Ernest A Pribram, Chicago addressed the Will-Grundy County Medical Society, March 11 on "Blood Transfusion."—At a meeting of the Union County Medical Society, March 12, Dr Edward J Stieglitz, Chicago discussed "Nephritis—Functional Considerations in Treatment."—Dr Nathaniel G Alcock, Iowa City, addressed the Peoria City Medical Society, March 3, on "Malignancy of the Urinary Tract."

Chicago

Personal—Albert L Raymond, Ph D, of the Rockefeller Institute for Medical Research, New York, has been appointed director of the research laboratories of G D Searle and Company, Chicago, pharmaceutical manufacturers.—Samuel R Lewis, Chicago, heating and ventilating engineer, addressed the Research Club of the University of Illinois College of Medicine at its 250th anniversary meeting on "How Air May Be Heated and Cooled" March 11.

Society News—A symposium on cancer of the colon and rectum was presented before the Chicago Medical Society March 11, by Drs Leon Bloch, Vernon C David and Charles B Puestow. A symposium on arterial diseases of the extremities constituted the program March 18, with Drs Samuel Perlow, Frank V Theis and Geza de Takats as the speakers.—The Chicago Pathological Society was addressed among others March 9, by Noel Paul Hudson, Ph D, Columbus, Ohio and Enid A Cook, A B, of the department of bacteriology, University of Chicago, on "Relation of the Herpes Antiviral Power of the Blood to Sex, Pregnancy and Menstruation."—At a meeting of the Chicago Roentgen Society, March 12, speakers included Drs Dallas B Phenister on "Calcium Carbonate in Cholelithiasis" and The Chicago Tuberculosis Society was addressed, March 13, by Drs Frederick Lieberthal on

"Urinary Tuberculosis—Its Relation to the Tuberculosis Problem in General", Thomas O Nuzum, Janesville, Wis, "Intra thoracic Fluid," and Jay Arthur Myers, Minneapolis, "Tuberculosis Lesions in Medical Students and Nurses"—Among others, Dr Henry W Meyerding, Rochester, Minn, discussed "Dupuytren's Contracture" before the Chicago Orthopaedic Society, March 13. Dr Roger Anderson, Seattle, discussed a paper presented by Dr James J Callahan on "Fractures of the Patella."

INDIANA

Personal—Dr Joseph S Skobba resident physician at the Fort Wayne State School since 1932, has been transferred to the Central State Hospital at Indianapolis, he has been succeeded at the Fort Wayne institution by Dr Arsenius R Lpiscono, East Chicago.

Society News—Dr Aloysius James Larkin, Chicago, discussed common uses of radium before the St Joseph County Medical Society in South Bend March 4.—At a meeting of the Jasper-Newton County Medical Society in Rensselaer, February 27, Dr Alexander A Goldsmith, Chicago, spoke on gastro intestinal infection.—The Daviess-Martin Counties Medical Society heard Dr Leonard A Ensminger, Indianapolis, discuss fractures at its meeting in Washington, February 25.

Graduate Courses—The fifth annual graduate meeting of the Indiana State Medical Association will be held at the Clay pool Hotel and the Indiana University School of Medicine, Indianapolis, April 8-9. Both days will be given over to discussions of cardiovascular, renal and neoplastic diseases. The meeting will be held during the annual graduate course of Indiana University School of Medicine, April 6-11. The latter course will be devoted to clinics in the forenoon and didactic work in the afternoon.

IOWA

Examination in Basic Sciences—The Iowa Board of Examiners in the Basic Sciences will conduct a written examination at the state capitol, Des Moines, April 14, at 9 a m. Those wishing to take the examination must obtain an application blank from the secretary, fill it out and return it, together with the fee of \$10, so as to reach the secretary, Edward A Benbrook, V M D, Iowa State College, Ames, not later than Monday March 30.

KANSAS

Wichita Graduate Clinic Day—The Sedgwick County Medical Society will hold its first annual graduate clinic in Wichita, April 7. The program will be an all day clinical meeting at the Alis Hotel, consisting of demonstrations of clinical and pathologic material presented by members of the society.

The Porter Lectures—Dr Jennings C Litzberg, professor of obstetrics and gynecology, University of Minnesota Medical School, Minneapolis, presented the sixth course of lectures under the Porter Lectureship in Medicine of the University of Kansas School of Medicine, March 17-18. The titles of the lectures were "The Pathology of Ectopic Pregnancy," "The Physician Who Became a God" and "Missed Abortion."

Society News—A symposium on fractures was presented before the Sedgwick County Medical Society, February 18, by Drs Earl J Frost, Charles R Rombold, Herve R Hodson, Arthur E Bence, Carl L Mills, Edwin D Lbright and Alonzo P Gearhart, all of Wichita. The society was addressed, March 17, by Drs Vincent L Scott on "Rheumatic Infections in Childhood" and Jacob F Gsell "Foreign Bodies of the Eye Ear, Nose and Throat." Speakers at the March 3 meeting were Drs John L Klemheksel and John G Missildine on "Diabetes in Pregnancy" and "Diagnosis in Kidney Infection" respectively.—Dr Warren H Cole, St Louis, addressed the Wyandotte County Medical Society, March 3, on "Causes of Failure in Gallbladder Surgery."

MARYLAND

The Thayer Lectures—Philip E Smith, Ph D, professor of anatomy, Columbia University College of Physicians and Surgeons, New York, gave the William Sydney Thayer and Susan Read Thayer Lectures in Clinical Medicine, March 12 13, at Johns Hopkins Hospital, Baltimore. His lectures were entitled "The Influence of the Hypophysis on the Uterus and Menstruation" and "Relation of the Hypophysis and Ovaries to the Menopause."

University News—Charles G King, Ph D, professor of chemistry, University of Pittsburgh, gave one of the De Lamar lectures in hygiene at Johns Hopkins University School of Hygiene and Public Health, March 10. His subject was "The

Prescorbutic State' The Society of Hygiene of the University was addressed, February 26 by Justin M. Andrews, Sc D and Harry F. White on 'A Survey of Protozoa Parasitic in Wild Rats in Baltimore, with Special Reference to *Endamoeba histolytica*,' and Roscoe R. Hyde, Ph D, Baltimore, 'Immunity to the Virus of Infectious Myomatosis.'

MASSACHUSETTS

Dr Zinsser Named Charles Wilder Professor—Dr Hans Zinsser, professor of bacteriology and immunology, Harvard Medical School, Boston, has been appointed Charles Wilder professor of bacteriology and immunology at the school. This is not a new professorship but it has only recently been assigned to the department of bacteriology.

Physicians' Art Exhibit—The Physicians' Art Society will hold its annual exhibition in the galleries of Doll and Richards, Boston, April 27-May 9. In addition to paintings, drawings and sculpture, other creative specimens of handicraft are eligible. Photographs will not be accepted. There is no limit to the number of subjects which can be sent by any one person, but a professional jury will select a limited number and supervise their hanging. Nothing will be accepted that has been shown at any of the previous exhibitions. All inquiries should be addressed to Mr. James F. Ballard, secretary of the society, at the Boston Medical Library.

Course in Bacteriology—A summer course in general and sanitary bacteriology will be offered by the department of biology and public health, Massachusetts Institute of Technology, Cambridge, June 16-July 28. The course will consist of lectures, recitations, demonstrations, laboratory work and appropriate field trips. The course is designed for beginners in bacteriology and to appeal to public health nurses, health education workers, public health laboratory and hospital technicians, sanitary inspectors, water works operators, milk inspectors, milk analysts and students preparing for careers in biologic science, public health or medicine. All inquiries should be addressed to Prof. Murray P. Horwood, Ph D, Massachusetts Institute of Technology.

MICHIGAN

Psychiatric Parole Clinic—The opening of the psychiatric parole clinic recently established at Eloise Hospital, Eloise, will take place April 1, newspapers report. The clinic will sponsor the classification and examination of patients in county institutions and return the mildly affected to their homes. Constant supervision of these patients will be maintained through a follow-up system (*THE JOURNAL*, Dec 14, 1935, p. 1993). A Detroit branch of the clinic will also be opened about April 1 in the juvenile court building; it was stated Dr. Martin H. Hoffmann is in charge of the work.

Fellowships in Public Health Administration—Dr. Morley B. Beckett, Lansing, formerly director of county health administration, state health department, has been appointed to the staff of the W. K. Kellogg Foundation to work out details for a fellowship system to enable graduate students in public health administration and kindred fields to obtain practical experience. It is reported two full-time one-year fellowships are now being planned, for which applicants must be graduates of recognized schools with special training in the public health field. Dr. Beckett has served with the health department of Cleveland, as assistant health commissioner of Saginaw and health officer of Isabella County. He plans to devote six months to the development of these fellowships.

Annual Concert of Medical Society's Orchestra—The symphony orchestra of the Wayne County Medical Society will give a joint concert with the glee club of the society at the Detroit Institute of Arts, March 30. The program is made up of eight selections by the orchestra and the glee club and two cello solos by Georges Miquelle, director of the orchestra. The Wayne County Medical Society Symphony Orchestra was established in January, 1935. In April it made its first appearance with twenty-eight members. Fifty musicians, some of whom are dentists, now make up the personnel. Officers are Drs. Frank M. MacKenzie, president; William P. Woodworth, vice president; Jacob Agins, secretary; Arthur E. Hammond, treasurer; and Raphael Altman, assistant conductor.

MISSISSIPPI

Bills Introduced—S. 442 proposes to create a county medical association in each county and to deny to a physician not a member of such a county medical association the right to practice medicine in the state. The county medical association for each county would be in complete charge of all public health work in the county or area of its organization and of all such public health work heretofore delegated to the state board of

health. The state board of health would continue as a centralized directing agency for the distribution of educational matter concerning public health and would promulgate rules and regulations for the prevention and spread of contagious infectious or epidemic diseases. It would be the duty of the several county medical associations to enforce those rules and regulations within their respective areas. H. 603 proposes to create a board of cosmetic therapy and to regulate the practice of cosmetic therapy or beauty culture. Such licentiate is to be permitted among other things to remove superfluous hair about the body of any person. H. 607 proposes that all communications made to a physician or surgeon by a patient under his charge or by one seeking professional advice are hereby declared to be privileged and such physician or surgeon shall not be required to disclose the same in any legal proceeding except at the instance of the patient or in any case where the physical condition of the patient is voluntarily put in issue by the patient.

MISSOURI

Publicity and the Press—Until such time as a policy and adequate working rules can be adopted, the president of the St. Louis Medical Society, under authority from the council, will handle any publicity or material for the press according to the society's weekly bulletin. This decision was made recently when questions arose that required action by a committee on publicity. The further need for such a committee was emphasized by a policy recently adopted by Washington University School of Medicine under which all news items emanating from the school and its affiliated hospitals are to be referred to a committee of the St. Louis Medical Society before publication in the lay press, the bulletin said.

St. Louis Clinics—The annual spring conference of the St. Louis Clinics will be held for one week beginning April 27. Clinical demonstrations will be given daily, and Tuesday evening the regular meeting of the St. Louis Medical Society will be under the direction of the clinics. Demonstrations by members of the medical reserve of the seventh corps area will be given from 4 to 5 p. m. each day and on Monday and Wednesday evenings. St. Louis physicians will present the entire program, which will be strictly clinical, providing a general review and a discussion of newer methods employed in the diagnosis and treatment of all branches of medicine. Further information may be obtained from the secretary, St. Louis Clinics, 3839 Lindell Boulevard, St. Louis.

NEBRASKA

Society News—The Omaha-Douglas County Medical Society, Omaha, had the following guest speakers: March 11, Drs. Frank E. Adair, New York, on 'Carcinoma of the Breast'; Erum R. Schmidt, Madison, Wis., 'Therapeutic Use of Oxygen'; Robert H. Kennedy, New York, 'Colles Fracture'; and Alfred W. Adson, Rochester, Minn., 'Trigeminal Neuralgia: Differential Diagnosis and Surgical Treatment'.—Drs. Rex L. Murphy and Paul J. Connor, Denver, addressed the Scotts Bluff County Medical Society, February 13, on 'Otitis Media Mastoiditis and Sinus Diseases' and 'Hypothyroidism' respectively.

NEW YORK

Milk-Borne Epidemic of Scarlet Fever—An outbreak of about 200 cases of scarlet fever in Wellsville, a town of 6,000, in January was traced to raw milk or cream, *Health News* reports. Of 115 cases investigated, 103 were in households regularly supplied with raw milk or cream supplied by one dealer. On one of the farms was found a cow with mastitis. It was also found that two sons of the owner of this farm had had sore throats about the time the cow showed infection. From this cow a hemolytic streptococcus having the characteristics of the type usually associated with human infections was isolated. Five deaths had occurred up to the time of the report.

Bills Introduced—A. 1719 proposes (1) to authorize the state department of health to promulgate requirements, specifications and tolerances for clinical thermometers and to designate by appropriate markings or seals such clinical thermometers as comply with its regulations and (2) to limit the sale of clinical thermometers in the state to thermometers approved by the department. A. 1720 proposes to make it unlawful to sell or to possess for the purpose of selling any clinical thermometer not conforming to certain requirements set out in the bill. A. 1731 proposes to require the board of regents of the University of the State of New York prior to Jan. 1, 1937, to establish and appoint a state board of chiropractic examiners. This chiropractic board would establish rules and regulations

fixing the qualifications of applicants for licenses to practice chiropractic, the examination of such applicants, and the granting and issuing of licenses to practice chiropractic. The bill proposes to define chiropractic, in effect, as the adjustment of the human skeletal frame, according to the doctrine of chiropractic. Such practice is not to include the science of surgical operations, the use of instruments, or the prescribing or use of drugs or medicines, but x-rays may be used for the purpose of examination. S 1431, to amend the pharmacy law, proposes that no manufacturer or wholesaler may sell any poisonous, deleterious or habit forming proprietary medicine except to the proprietor of a pharmacy, drug store or registered store or to persons authorized to make purchases for state institutions or public or private hospitals. S 1443 proposes to regulate the conduct of clinical laboratories and to require such laboratories to be under the immediate supervision of a licensed clinical laboratory technologist or a person holding a valid and unrevoked license to practice medicine and surgery in the state. The bill proposes to define a clinical laboratory as "any place, establishment or institution or department whether or not it is termed or called a clinical laboratory or given any other designation of like import, organized for the practical application of one or more of the fundamental sciences, such as bacteriology, biochemistry, serology and parasitology and other allied subjects, by the use of specialized apparatus equipment or methods for the purpose of furnishing regularly licensed practitioners of the healing arts or other person with the results of such laboratory examinations or tests or analysis of specimens submitted." S 1522 and A 1884, to amend the laws relating to the conduct of maternity hospitals, propose to require such hospitals in the city of New York to be licensed by the commissioner of hospitals of New York City. S 1534 and A 1793 propose to create a board of psychiatric examiners and to prescribe qualifications for qualified psychiatrists. S 1559 to amend the workmen's compensation act, proposes to permit the annual expenditure from the vocational rehabilitation fund for five years of a sum not exceeding \$50,000 to make studies and disseminate information on the subject of control and prevention of diseases caused by inhaling harmful dusts. A 1797 to amend the workmen's compensation act proposes to authorize compensation for total disability or death from silicosis or other dust diseases. It proposes that compensation shall not be payable for partial disability. The bill proposes to limit the medical treatment for an employee disabled by an occupational disease due to or resulting from the inhalation of harmful dust to a period of ninety days from the date of disablement and, on the order of the industrial board, for an additional ninety days.

New York City

Anniversary of Hospital Service—The New York City Department of Hospitals announces that a public meeting will be held at the New York Academy of Medicine, May 12, to celebrate the completion of 200 years of continuous hospital service by the city. Dr Sigismund S Goldwater, commissioner of hospitals, will preside and speakers will be Mayor Fiorello H La Guardia, on the functions of the municipality in the care of the sick, Dr Henry E Sigerist Baltimore, historical development of medicine in the United States, and George E Vincent, Ph D, former president of the Rockefeller Foundation, responsibilities, opportunities and social significance of the hospital.

Society News—Drs Francis R Packard, Philadelphia and Edgar Erskine Hume, librarian, Army Medical Library, Washington, D C, addressed a stated meeting of the New York Academy of Medicine, March 5, arranged in cooperation with the section of historical and cultural medicine. Dr Packard spoke on "William Cheselden Some of His Contemporaries and Their American Pupils Before the Hunters" and Dr Hume on "The Medical Work of the Knights of St John of Jerusalem."—Drs Cornelius G Dyke and John E Scarff, among others, addressed the New York Neurological Society at a joint meeting with the section of neurology of the New York Academy of Medicine, March 3, on "A Pathognomonic Encephalographic Sign of Chronic Subdural Hematoma" and "Treatment of Obstructive Hydrocephalus by Third Ventriculostomy" respectively.—The Philadelphia Metabolic Association presented the program of the clinical section of the New York Diabetes Association, March 20, on "Diabetic Acidosis." Speakers, all of Philadelphia, were Walter G Karr, chemistry, Drs Joseph T Beardwood Jr clinical aspects Edward S Dillon, complications, and Edward L Bortz treatment.—A symposium on "special surgery" was presented before the International and Spanish Speaking Association of Physicians Dentists and Pharmacists, February 21, by Drs Joseph East-

man Sheehan, Lewis Gregory Cole, Pol N Coryllos and William H Cary.—The Bronx County Medical Society recently adopted a resolution favoring adoption of the child labor amendment to the Constitution of the United States.

NORTH CAROLINA

Personal—Dr Samuel B McPheeters, Charlotte, has been appointed health officer of Wayne County to take office April 15, after he has completed a course at the University of North Carolina.—Dr John F Foster, Sanford, was recently honored by being chosen "man of the year" in Lee County, he received a silver loving cup.—Dr Mott P Blair, Marshville, was honored at a community meeting, February 28, in recognition of his long service. He was chosen by the Marshville Federated Clubs as the outstanding citizen of the town.—Dr Lorenzo L Parks, Auburn, Ala, has been appointed health officer of Edgecombe County.

Society News—Dr John T Saunders, Asheville addressed the Buncombe County Medical Society, Asheville, February 3 on "Injuries to the Knee Joint"—Dr Lawrence T Royster, University, Va, was the guest speaker at the annual meeting of the Raleigh Academy of Medicine, February 1, on "Nephritis in Childhood"—Dr Francis Bayard Carter, Durham addressed the Guilford County Medical Society, Greensboro January 2, on "Interruption of Pregnancy"—Drs Malory A Pittman, Wilson, and Hugh A Thompson, Raleigh, addressed the Fourth District Medical Society at a meeting in Wilson February 11, on "Pelvicephalometry" and "Traumatic Surgery" respectively.—Drs William Eugene Ketter, Kinston and Herbert A Codrington, Wilmington, addressed the New Haver County Medical Society, Wilmington, January 16, on "Sodium Lactate Therapy in Severe Acidosis" and "Medical and Surgical Treatment of Gallbladder Diseases" respectively.

OKLAHOMA

Personal—Dr Maurice L Peter, Blackwell, has been appointed health officer of Kay County to succeed Dr Luther H Becker, Blackwell.—Dr Marshall D Carnell, Okmulgee, has been appointed health officer of Okmulgee County to succeed the late Dr John J C Rembert.

Society News—Speakers at a meeting of the Tulsa County Medical Society March 9, were Drs Gregory A Wall and Herbert S Nauheim, on "The Fundamental Factor in the Cure of Hernia" and Blood Groups and Paternity," respectively, and Floyd L Rheam, attorney, "Some Legal Problems in Medicine." The Tulsa society was addressed, February 17, by Drs Homer A Ruprecht and Davy L Garrett, Tulsa on "Recent Advances in the Study of Biliary Diseases", the program February 24 was a paper by Dr Felix M Adams Vinita, on "The Management of Mental Cases"—Dr Robert M Shepard, Tulsa, addressed the Craig County Medical Society, recently, on pulmonary tuberculosis.

OREGON

Society News—Dr Paul A Pemberton, Woodburn addressed the Polk-Yamhill-Marion Counties Medical Society, Salem, January 14, on artificial fever therapy.—A discussion of pneumonia was presented before the Multnomah County Medical Society, Portland, February 19 by Drs James Marr Bisailon, Thomas D Robertson and Sherman E Rees.—Dr John C Lyman, Walla Walla, Wash addressed the Umatilla County Medical Society, Pendleton March 10, on "Renal Tuberculosis", Dr Carl J Johannesson Walla Walla, presented unusual x-ray films and discussed technical errors in films resulting in wrong interpretations.

PENNSYLVANIA

Testimonial Dinner—Drs David S Funk, John B McAlister and John F Culp Harrisburg, were guests of honor at a dinner given by central Pennsylvania alumni of the University of Pennsylvania at the Harrisburger Hotel February 20. More than sixty attended. Dr McAlister, who is a former president of the Medical Society of the State of Pennsylvania graduated in 1887, Dr Culp graduated in 1886 and Dr Funk in 1881.

Society News—Drs George J Kastlin and John M Johnston, Pittsburgh, addressed the Beaver County Medical Society March 12, on "Blood Dyscrasias as Seen in General Practice" and "Chemotherapy in Pneumonia" respectively.—Dr Frank N Allan Boston, addressed the Lycoming County Medical Society Williamsport, March 13, on "General Management of the Diabetic"—Dr Marc W Bodine Williamsport, addressed the Tioga County Medical Society February 21 on cancer of the stomach.

Philadelphia

Newbold Lectures—The thirty-sixth group of Mary Scott Newbold Lectures was delivered March 4 before the College of Physicians of Philadelphia. The lecturers were Drs Franklin L. Payne, on "Practical Aspects of Modern Female Endocrinology" and Leonard G. Rowntree, 'Organotherapy from the Internist's Viewpoint'.

Society News—Speakers before the College of Physicians of Philadelphia, February 5, were Drs Louis H. Clerf and Baxter L. Crawford, on "Benign Glandular Tumors of the Bronchus", Dorothea E. Smith, Ph.D., Edward J. Czarnetzky, Ph.D., and Dr. Stuart Mudd, 'Evaluation of Mercurial Antiseptics in the Presence of Serum' and Dr. Walter Hughson, 'Experimental Investigations of the Physiology of the Ear'.

—Dr. Edward A. Strecker addressed the Obstetrical Society of Philadelphia, February 6, on 'The Mental State of the Woman During Pregnancy and the Puerperium'.—Dr. Ursus V. Portmann, Cleveland, addressed the Philadelphia Roentgen Ray Society, February 6, on "Postoperative Prophylactic Roentgen Therapy in Treatment of Carcinoma of the Breast".—The New York Surgical Society held a joint meeting with the Philadelphia Academy of Surgery, February 12 with the following speakers, among others: Drs. Edward T. Crossan, on "Bone Drainage in Acute Hematogenous Osteomyelitis", Lewis K. Ferguson, "Painful Shoulder", Alexander Randall and Frederick A. Bothe, 'Value of Preoperative Irradiation in Tumor Testis'.—A discussion of meningitis featured the meeting of the Philadelphia Neurological Society, February 28, with the following speakers: Drs. Charles Armstrong Washington, D. C., James W. Watts, Ignatius S. Hneshka and Ernest L. Noone.

RHODE ISLAND

Bill Enacted—H. 510 amending the workmen's compensation act, has become a law. Among other things, the new law requires the employer to furnish to an injured worker reasonable medical and hospital services and medicines without limit as to amount during the first eight weeks after an industrial injury, and for such other period as in the opinion of the director of labor may be deemed necessary. The prior law limited the employer's liability for medical services to \$100 or \$150, according to circumstances.

Bills Introduced—H. 735 proposes, among other things, that a licensed physician or surgeon cannot, without the consent of his patient, be examined in a civil action, as to any information acquired in attending the patient, which was necessary to enable him to prescribe or act for the patient. H. 745 proposes to require all applicants for licenses to practice any form of the healing art, as a condition precedent to examination by their respective "professional" boards, to pass examinations in anatomy, physiology, pathology, diagnosis, chemistry, bacteriology and public health, to be given by a state board of examiners in the basic sciences, which the bill proposes to create. This basic science board is to consist of three members appointed by the director of public health because of their proficiency in the basic sciences. Neither the director of public health nor any member of any of the various 'professional' examining boards is to be a member of the basic science board. H. 747, to amend the uniform narcotic drug act, proposes to define narcotic drugs so as to include cannabis and every substance neither chemically nor physically distinguishable from it. H. 748 proposes that in an appeal from an order of a licensing board revoking a license to practice medicine and surgery, osteopathy or chiropractic the order of the board shall remain in effect during the pendency of the appeal. H. 749 proposes to authorize the state department of public health to make examinations of persons reasonably suspected of having venereal disease and to quarantine or to isolate persons infected with any venereal disease whenever quarantine or isolation is necessary to protect the public health.

SOUTH CAROLINA

Bill Passed—H. 1640 has passed the house, authorizing the city council of any municipal corporation of more than 5,000 inhabitants and less than 10,000 inhabitants which has acquired constructed or caused to be constructed a hospital, to establish a city hospital commission to operate and manage such hospital.

TENNESSEE

Personal—Dr. Alonzo L. Hardison Jr. of Marysville has been appointed director of the Blount County health department to succeed Dr. Owen F. Agee of Marysville who resigned in November. —Dr. John B. Youmans, associate professor of medicine, Vanderbilt University School of Medicine, Nashville, has been appointed director of graduate instruction. Dr. You-

mans will have special charge of courses given for practicing physicians with the cooperation of the Commonwealth Fund.

Society News—Dr. Carl S. McMurray addressed the Nashville Academy of Medicine, February 4, on "Comparison of Hysterectomy and Radiation Therapy in Fibroid Tumors of the Uterus".—Dr. John T. Murphy, Toledo, Ohio, addressed the Chattanooga and Hamilton County Medical Society, Chattanooga, February 13, on bone tumors. —Dr. Morris Fishbein, Chicago, editor of THE JOURNAL, addressed the Madison County Medical Society, Jackson, February 26. At a meeting February 4 Dr. James B. Miller Jackson, presented a paper on "Minor Surgery in Treating Infections of the Hand".—Drs. Olin West, Chicago, Secretary, American Medical Association, and Harrison H. Shoulders, Nashville secretary, Tennessee State Medical Association, addressed the Memphis and Shelby County Medical Society, March 17, on medical economics. Drs. Jerome L. Morgan and Frank T. Mitchell, Memphis, addressed the society, February 18, on "Prostatism" and "Anhydremia Associated with Intoxication" respectively.

TEXAS

Society News—Drs. Robert L. Moore and John E. Dunlap, Dallas, addressed the Kaufman County Medical Society, Terrell, February 4, on "Tuberculosis in Infancy and Childhood" and "Allergy" respectively. —Speakers at a meeting of the Lamar County Medical Society in January at Paris were Dr. Davis Spangler and A. L. Frew, D.D.S., Dallas, on "Preoperative Care of the Cleft Palate Patient" and "Treatment of Cleft Palate" respectively. —Dr. Edward Delehanty, Denver, was guest speaker at a meeting of the Palo Pinto Medical Society, Mineral Wells, February 3 on "The Development of Neurology". —Drs. Charles P. Hawkins and George R. Enloe, Fort Worth, addressed the Tarrant County Medical Society, Fort Worth, February 4, on "External Cephalic Version" and "Epispadias in the Female" respectively. —Dr. Jackson Stewart Cooper, Abilene, addressed the Taylor-Jones Counties Medical Society, Abilene, February 11, on "Rupture of the Urinary Bladder and Urethra".

VIRGINIA

McGuire Lectures—The annual Stuart McGuire Lectures of the Medical College of Virginia, Richmond, will be delivered by Dr. Edward C. Rosenow, Rochester, Minn., April 6-7, at the Richmond Academy of Medicine. Dr. Rosenow's subjects will be "Focal Infection and Elective Localization" and "Streptococci in Relation to Diseases of the Nervous System". During the day of April 7 clinics will be conducted by the faculty of the college.

Personal—Dr. Fred J. Wampler, Richmond, has been appointed medical adviser to the Works Progress Administration of Virginia. —Dr. W. Johnson Strother, Culpeper, was guest of honor at a banquet recently given by the Medical-Dental Society of Culpeper County paying tribute to his long service as a physician. Speakers included H. B. Lacy, D.D.S., Culpeper; Rev. Thomas W. Hooper and Drs. Charles Bruce Morton II and John H. Neff, University, James G. Brown Woodville, Jesse N. Clore, Madison, and Martin B. Hiden, Warrenton.

Society News—The Souths de Virginia Medical Association held its quarterly session at the Central State Hospital, Petersburg, March 10. Speakers were Drs. Thomas F. Wheelton, Richmond, on "Value of the Cystine Content Determination in Treatment of Arthritis", Guy W. Horsley, Richmond, "Postoperative Treatment of Abdominal Cases", Charles R. Robins, Richmond, "Original Bassini Operation", Page E. Thornhill, Norfolk, "Two Important Prenatal Examinations and Obstetric Technic in a Poor Home", Wright Clarkson and Wilbur Allen Barker, "Radiosensitivity and Radioresistance in Tumor Therapy". —The Postgraduate Medical Society at a meeting February 11 changed its name to the Fourth District Medical Society. Speakers were Drs. Thomas G. Hardy, Farmville, on differential diagnosis of acute conditions in the abdomen, John A. Proffitt, Burkeville, acute conditions in the chest, and John A. B. Lowry, Crewe, prevention and treatment of puerperal sepsis.

WYOMING

Scarlet Fever Prevalent—The Wyoming state board of health reported 331 cases of scarlet fever in December, with five deaths. 325 cases in January, with no deaths and 361 cases with no deaths in the first twenty days of February. An account in *Colorado Medicine* points out that the disease is mild and that about a third of the cases have occurred in persons more than 21 years old. The U. S. Public Health Service reported January 25 that scarlet fever was unusually prevalent through the West North Central, Mountain and Pacific states.

GENERAL

Tri-State Hospital Meeting—The Tri-State Hospital Assembly will be held in Chicago, May 6-8, at the Hotel Sherman. The assembly comprises the hospital associations of Indiana, Illinois and Wisconsin, together with associated groups.

Seminar on Health Education—The National Tuberculosis Association will sponsor a seminar on health education in New Orleans, April 21, the day before the opening of its annual session. There will be two courses one on health education and one on popular health education. Emphasis will be placed on practical ways and means of teaching the child and reaching the adult public.

Medical Bill in Congress—*Change in Status* H. R. 11035, making appropriations for the War Department for the fiscal year ending June 30, 1937 has been reported to the Senate, with amendments. The provision in the bill, as passed by the House forbidding the maintenance of medical units in the Reserve Officers' Training Corps was stricken from the bill by the Senate Committee on Appropriations. An additional appropriation was proposed to provide for the establishing and maintaining of such units.

Public Safety Program—The National Safety Council will soon launch a public safety program to be carried out in conjunction with the five year campaign now in force to reduce traffic accidents. Recent expansion of the council's field for traffic accident prevention, made possible by a grant from the automotive industry, will facilitate the safety program. Eight field men will be available in various parts of the United States to assist state and community officials and organizations in their efforts to reduce accidents. Pamphlets written in popular style will be prepared for nationwide distribution, and illustrated articles will be prepared and distributed to newspapers. The new program is a response to various cities and states that have requested assistance in organizing definite public safety plans.

Changes in Status of Licensure—The Rhode Island Department of Public Health reports the following disposition of a license revocation.

Dr. William H. H. Briggs Pawtucket license revoked by action of the state supreme court which recently upheld revocation of his license by the department in 1933 on a charge of abortion.

The New York State Board of Medical Examiners recently reported the following action.

License of Dr. Vladimir Gregory Burtan whose last known address was 133 East Fifty Eighth Street New York revoked at a meeting Dec. 20, 1935 because of his conviction of a felony.

At a meeting of the Board of Health of Hawaii, Dec. 28, 1935, the following action was taken.

Dr. Mars L. Madsen formerly of Paia Hawaii license revoked for habitual intemperance.

The Massachusetts Department of Registration in Medicine has reported the following.

Dr. Russell B. Street Conway license revoked following his admission to the Northampton State Hospital.

Society News—Dr. Donald B. Armstrong, New York, was elected president of the National Health Council at its annual meeting February 6 in New York. He succeeds Theodore Roosevelt. The American Institute of Nutrition will hold its third annual meeting in Washington, D. C., March 25. John R. Murlin, Ph.D., Rochester, N. Y., is president of the institute and Icie G. Macy, Ph.D., Detroit, secretary. The American Association of the History of Medicine will hold its annual meeting at Atlantic City, May 4, with afternoon and dinner sessions at Haddon Hall. The annual convention of the Catholic Hospital Association will be held at the Fifth Regiment Armory, Baltimore, June 15-19. The American Society for the Hard of Hearing will hold its annual meeting in Boston, May 26-30, at the Hotel Statler. Dr. William F. Braasch, Rochester, Minn., was chosen president of the Northwest Regional Conference at its session in Chicago, February 16. The meeting next year will again be held in Chicago. National Hospital Day will be observed May 12, the birthday of Florence Nightingale. Since 1921 hospitals have held open house on this day to acquaint the public with their work. The southern section of the American Congress of Physical Therapy will hold a meeting in New Orleans March 23-24. Guest speakers will include Chicago physicians Drs. Abraham R. Hollender on "Newer Aspects of Ionization Therapy in Nasal Allergic Disorders," Oscar B. Nugent, "Evaluation of Phototherapy in Ophthalmology," Harry C. Rolnick, "Transurethral Electroresection in Prostatic and Bladder Neck Obstructions," and John S. Coulter, "Physical Therapy in Relation to Arthritis," and Howard A. Carter, B.S. secretary, Council on Physical Therapy, American Medical Association, Chicago, "Generation of High Frequency Currents, Discussion of Concepts, Units and Radio Circuits as Applied to Short Wave Diathermy."

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb. 15, 1936

Reform of the Coroner's Inquest

The ancient office of coroner can be traced back to the twelfth century. His function is to inquire into deaths not due to natural causes, and on the whole he has done this efficiently through the centuries. But this archaic office has fallen behind the standard required in modern times and has been the subject of much criticism. The inquiry is not carried on by the strict rules of evidence which prevail in other courts, so that prejudice may be unfairly aroused and a case built up against an accused person. Moreover, before a case can come before a judge the accused has to appear in police court and the proceedings that have taken place before the coroner are unnecessarily duplicated. Radical reform has been delayed so long because the English are a conservative people, attached to ancient institutions which they alter only after much criticism. But they are also practical and, as their history shows, have no difficulty when aroused in doing what is necessary. A committee of well known lawyers containing one representative of the medical profession, Sir Farquhar Buzzard regius professor of medicine in the University of Oxford, was appointed by the government a year ago to inquire into the law and practice of coroners' inquests. The committee has now made recommendations that will radically reform the coroners' inquest and remove defects that have existed too long. The recommendations are as follows.

The coroners' jurisdiction should be limited to the investigation of the facts how, when and where the death occurred and this investigation should be clearly distinguished from any trial of liability, whether civil or criminal. In cases of suicide the press should be prohibited from publishing an account of the proceedings, though the inquest should be held in public as at present. All that the press should be allowed to publish is the fact that the inquest has been held, the name and address of the deceased and the verdict that he died by his own hand. The verdict of *felo de se* should be abolished, and the verdict in cases of suicide should simply be that the deceased died by his own hand. No inquiry into his state of mind should be made save as it might throw light on the question whether he took his own life and no reference should be made in the verdict to the state of his mind. There are several reasons for this change. Out of consideration for the deceased's relatives rather than because of justification by the facts, juries have often brought in a verdict of 'suicide while temporarily insane'. The inquiry into the state of mind of the deceased has led to the reading in court of letters and other intimate documents written by him which have often been painful and harmful to the living. The coroner should no longer have the power to commit any person for trial on a charge of murder or manslaughter, and the inquisition should not name any one as guilty of these offenses. If questions of criminality are involved the laws of evidence should be observed. When a person is suspected of causing death he should not be called and put on oath unless he so desires and should not be cross examined. Coroners' courts should be prohibited from dealing with questions of civil liability. Verdicts of censure or exoneration should be prohibited but this does not exclude general recommendations designed to prevent further fatalities. The coroner should have a discretion to dispense with holding an inquest in the case of deaths due to simple accidents or chronic alcoholism or deaths under an anesthetic or during an operation. But he should be obliged to hold an inquest in cases of suspected industrial disease. Necropsies ordered by coroners, save in exceptional cases, should

be made by pathologists whose names appear on a government list, to be compiled under the advice of an expert committee. For cases of industrial disease there should be a special list of pathologists. At present the majority of necropsies performed on the order of the coroner are done by general practitioners, usually by the physician who attended the deceased, and it is a matter of the coroner's discretion whether a pathologist is employed or not. The clinical and postmortem evidence should be collated, and for this purpose the coroner or pathologist should be empowered to ask the practitioner who attended the deceased to supply a report or to be present at the necropsy, for an appropriate fee. In criminal cases a chief officer of police should be empowered to request the coroner at any time before the inquest is over to order a necropsy. The routine work necessary before and after a necropsy should be performed by the pathologist's assistant and not by police officers.

Qualifications for appointment as coroner should be primarily legal. Candidates should satisfy tests not only of their knowledge of law and their practical experience but also of their acquaintance with medical jurisprudence. Only lawyers should be appointed, as the sifting of evidence requires legal training. A coroner without medical knowledge would be fully informed of the medical aspects of the case by the medical witnesses. At present the majority of coroners are lawyers but a minority are physicians. The committee recognizes that the latter have done valuable work but considers that legal training is of greater importance than medical. The *British Medical Journal* objects to this recommendation. It admits the desirability of the coroner having a legal qualification but thinks that it is almost essential that he should have a medical one. It points out that there are a large number of persons qualified for both professions which would be increased if the double qualification should be recognized as highly desirable in a coroner.

New Method of Producing Citric Acid

The Italian embargo on the export of lemons resulting from the need for them in the Abyssinian war, would have resulted in world shortage of citric acid but for a British discovery. Until 1929 citric acid was obtained only from lemons and the whole supply was in the hands of Italian manufacturers. When the export became restricted experiments were made in England and it was found that the black mold which forms on fruit turns sugar into citric acid. By a process of fermentation the black mold can be grown direct on sugar. From this was evolved a simple method of producing the acid which is just as good as the original and is cheaper.

Antimosquito Measures for a Tropical Air Line

The new air line which is to be opened between the Sudan and Nigeria is awaiting a certificate of freedom from disease-carrying mosquitoes. It will not be operated until the necessary steps have been taken to clear the mardomes and the land in their vicinity of mosquitoes which might carry the germs of yellow fever. Fortunately the flying range of the mosquitoes does not exceed a mile and the areas to be treated are therefore not extensive. This measure is being taken as a precaution against interruption of the service in the future and also that the line may comply strictly with the provisions of the International Sanitary Convention. The new line passes from Khartoum across the Sudan into French Equatorial Africa on its way to Kano in Nigeria where it ends for the present. Subsequently it will be continued to Lagos. It is stated that the westerly part of the route is free of the risk of yellow fever contagion through mosquitoes. The work of drainage and disinfection is concerned only with the easterly portion. In its present form the route measures about 1,800 miles and will be operated as soon as its sanitary certificate is in order.

The Lowest Infant Mortality on Record

The registrar general's provisional figures for 1935, which have just been published, show the lowest infant mortality on record. The death rate of infants under 1 year of age for the whole of England and Wales was 57 per thousand live births. The table gives the annual rates for the last ten years. The

Infant Mortality Rates

Year	England and Wales	County of London
1926	70	64
1927	70	51
1928	67	67
1929	74	71
1930	60	59
1931	66	61
1932	63	67
1933	64	60
1934	59	67
1935	57	68

1935 birth rate for England and Wales is 0.1 per thousand of population below that of 1934 and 0.3 above that of 1933, the lowest recorded.

Tetanus from Catgut Sutures

Cases of tetanus due to catgut sutures occur from time to time in spite of every care in sterilizing the catgut, which therefore seems never to be perfectly safe. The latest case occurred in a boy of 15 who died from tetanus after an operation in a hospital at Cambridge. Tetanus bacilli were found in the sutures. The medical superintendent said at the inquest that in his forty-one years' experience no similar case had occurred. The particular gut used in this case was derived from sheep on a farm in Australia where the land was specially treated in order to kill the tetanus bacillus in the soil. The manufacture of catgut in this country now is carried on under scrupulously clean conditions and is subject to regulations of the Ministry of Health, which regularly sends inspectors to witness the process.

PARIS

(From Our Special Correspondent)

March 3, 1936

Free Medical Care for Veterans

In France, every pensioned veteran, i. e., with an incapacity of at least 10 per cent is entitled to get the free care of the physician of his choice. The physician is paid by the Government according to an official scale. A control bureau will prevent abuses. This bureau has just published its report. The number of beneficiaries are 856,427, of whom 453,654, or 53 per cent were treated. The total expenses were more than 114,000,000 francs, an average of 252 francs per payee. The doctor fees (including transportation fees) were 40 per cent of this sum. The cost of drugs is figured at 43 per cent, the hospital fees 10 per cent and the remainder, 7 per cent, administration charges. This means that the average paid for every veteran to every physician is 107 francs and that the average for each of the 17,000 physicians concerned is about 3,000 francs. Only ninety-four physicians received more than 20,000 francs in the calendar year 1935. As a matter of fact, the care given to the disabled veterans is a small benefit to the French general practitioner.

Aron's Reaction for Cancer

Beclere read before the Academie de medecine, a paper about Aron's test or reaction. This test initiated in 1933 and derived from Zondek's work is an adrenal cortex reaction. It consists in examining by biopsy, a part of the adrenal cortex of a rabbit and after three or four days injecting the rabbit

with a urinary extract Two days after the last injection the rabbit is killed and its renal cortex compared with the fragment taken in the first biopsy

Aron reports the results in 162 tests on 125 subjects, on whom his method was used for clinical purposes As the method depends on histologic interpretation, being a comparison between the cortex of the treated animal before and after the treatment, it was necessary not to let the pathologist be aware of the diagnosis in the cases studied Again, to make the chances even, the series of observations were mixed with positive and negative cases in equal proportions A strict control allowed the elimination of thirty-four of the 162 results, leaving an undisputable remainder of 128 reactions These were grouped under six notations negative, doubtfully negative, i e., no cancer, doubtful, +, ++ and +++, i e., cancer Thirty-five cases involved unquestionable instances of cancer The reaction was correct in thirty, three +++, ten ++ 9 + and eight doubtfully positive In five authenticated cases the reaction was negative It concerned one cancer of the pylorus, three of the stomach and one of the colon In all, the proportion of suspected and biologically confirmed cancers was 85 per cent Eighty-eight tests were made in noncancerous ailments plus 8 cancers operated on without any clinical evidence of relapse Seventy-eight reactions were negative and thirteen were doubtfully negative In ten cases, on the other hand, the reaction was + or doubtfully positive So the proportion of correct reactions was 89.3 per cent The whole amount of errors is consequently fifteen in 131 tests, or 11.7 per cent

These results are in favor of the specificity of the substance contained in the urine of the cancerous, regardless of the nature of the tumor The number of errors is related to technical difficulties, for this test requires an experienced pathologist, adequately equipped These considerations stand in the way of the practical adoption of Aron's technic, but its author is satisfied to have ascertained its principle, hoping that further improvements will permit the use of this new and important test by pathologists generally

BERLIN

(From Our Regular Correspondent)

Jan 27, 1936

Jubilee of Kaiser Wilhelm Society for Advancement of Science

Under the presidency of the physicist Prof. Max Planck, the Kaiser Wilhelm Society for the Advancement of Science celebrated, January 10, its twenty-fifth anniversary

The creation of research centers in addition to the German scientific academies, universities and hochschulen, centers not strictly controlled by the government, had long been contemplated The expansion of official scientific enterprises in Germany necessitated the erection of a research institution devoted to special fixed scientific fields Besides, in many instances research activities had suffered because of the exacting nature of teaching duties in the hochschulen Then, too, the ability to teach is not the possession in equal degree of every research worker At length sentiment crystallized about the concept of a well appointed research institution staffed by competent specialists Since it was not subsidized by the government, this institution, in order to function with all possible freedom, must be established on a sound economic basis Funds for its maintenance therefore would be subscribed chiefly by enthusiastic private patrons of scientific progress The prosperous condition of the Germany of twenty-five years ago made possible the realization of such a project, so in 1911 at the suggestion of Wilhelm II, acting in cooperation with a group of men prominent in economic life, the Kaiser Wilhelm Society, an organization unique of its kind, was called into being on the occasion of the centenary of the University of Berlin Adolf

von Harnack, who served as president of the society from its founding until his death, was succeeded by Max Planck Substantial assistance came to the society from various sources its own members, industrial leaders, other wealthy donors, and the government

The society was divided into thirty-four organizations distributed throughout the reich with headquarters in Berlin-Dahlem Some of the institutes were devoted to more or less theoretical activities, for example, the institute of biology and that of cell physiology, both in Berlin-Dahlem, the institute of anthropology, human genetics and eugenics, the institute of biochemistry and, further away, the well known Vogelwarte (ornithologic observatory) at Rossitten in East Prussia

Another group of research stations grapple with important practical problems Of special benefit to the industrial worker is the institute of occupational physiology at Dortmund, which concerns itself with the physiology, pathology and hygiene of work There in particular a systematic study is made of the questions of fatigue, of decent and suitable working conditions of the relationship between types of work and types of diet and so on, the institute thus functioning in the interest of all as an objective and impartial tribunal The institute for research in cerebrology at Berlin and the German research institute at Munich also carry on valuable activities

It is the business of the hydrobiologic institution constantly to seek out new and promising paths of research, while its practical function has to do with increasing the stock of fish in our waters, an important factor in the nation's food supply The German entomologic institute occupies an analogous position, its work combining the theoretical and the practical While making an objective study of how products worth millions of marks are each year destroyed by insects, the institute at the same time directs a substantially successful campaign against these pests The work program of the institute for research in stock breeding at Hünchberg is carried out in much the same way This institute is especially concerned with the fundamentals of crop sowing and animal husbandry

There is a third group of research institutions in which problems created by the needs of industry are dealt with Thus there is an institute for coal research at Mülheim (Ruhr), an institute for metallurgic research and, separate from the last named, an institute for iron research An institute for silica research helps to solve the technical problems of the ceramics, the glass and the cement industries, while an institute for leather research occupies itself with the fundamentals of the leather industry, including the chemistry and colloid chemistry of tanning technic These represent but a few examples of a much longer list of important research institutions

As the activities of the Kaiser Wilhelm Society embrace both the theoretical and the practical, so the central administration keeps free from onesidedness, for, apart from the institutions mentioned, the society serves the cultural interests by supporting special sociological scientific societies devoted to esthetic, cultural and legal studies Further units of the Kaiser Wilhelm Gesellschaft are quasinational, quasi-international in character, for example, the Rovigno zoological station, a German Italian institution for oceanographic research, the biologic station at Lunz (Lower Austria), and finally the Jungfrauoch High Alpine research station in Switzerland, maintained for common research activities by Germany, France, England, Belgium, Austria and Switzerland

The fact that through the evil days that followed the war even with inflation and revolution the work of the society never completely came to a standstill, and that under three different types of government the organization has been able to function and to expand, bears witness to its vitality In every field of learning the notable achievements of the Kaiser Wilhelm Gesellschaft have been acknowledged

This was well expressed in the jubilee celebration in which numerous friends of science participated. Among others the American ambassador stressed particularly the cordial international relations maintained by the society. The president of the Kaiser Wilhelm Society, Professor Planck, called attention to the substantial assistance rendered by the government of the reich and praised the generosity of the Rockefeller Foundation, recently expressed again in the gift of a new building for the Kaiser Wilhelm institute of physics. Of the guests lodged in the society's Harnack House (a building set aside for the accommodation of visitors), the Americans outnumbered all other foreigners (a total of 172 guests of whom one third were foreigners was accommodated at the house during the summer semester of 1935). Two scholarly festschrifts were published in connection with the jubilee. Among the notable anniversary papers was one by Professor Debye, director of the Kaiser Wilhelm institute of physics, on the structure of liquids, another by Professor Bruns, on German art in Italy, was also of interest.

The problem of the gleichschaltung of learned institutions also came to the fore in the course of the jubilee. Professor Planck in his commemorative address mentioned the late Nobel prize winner Haber, who had been director of a Kaiser Wilhelm institute and whose ingenious nitrogen synthesis was of great service to the German prosecution of the war. The reichsminister of education, Rust, in an after dinner speech again referred to Haber, who was a Jew, without mentioning him by name. While acknowledging the great service performed by this man, he said, one must in such cases differentiate between the scientist and the person. Rust further stated as the fundamental ideal for scientific research that it be carried on within the wind-proof shelter of liberally endowed institutions, freed from restraint and separated from teaching activities. But already the experience of the World War had shown that research could not always maintain this character. It was then for the first time that the Kaiser Wilhelm Society, departing from its original purpose, bowed to necessity and acquired the power to 'carry on' this power which alone underlies all existence. The form this power may take is immaterial. History shows time and again how forms may be shattered, the form of the Kaiser Wilhelm Society too may disintegrate. (It is perhaps interesting to note in this connection that the society is being assailed by the party organs because of its scientific objectivity and reservedness in political matters.)

Genital Tuberculosis

As he reported to the Berlin Medical Society, Dr Caffier has observed at the woman's clinic of the University of Berlin an increase of genital tuberculosis in recent years. He attributes this less to the improvement in diagnostic aids than to the more frequent performance of laparotomies such as are undertaken on account of sterility for example. The diagnosis of this type of tuberculosis is still more or less accidental. According to Caffier, microscopic examination is absolutely essential especially for the recognition of tubal tuberculosis, cystic tuberculous salpingitis and uterine and ovarian tuberculosis. Primary tuberculosis of the genitalia is a rarity (contrary to former opinion) it is chiefly a question of endogenous reinfection with hematogenous diffusion through general tuberculosis. Exogenous reinfection is not at all rare. Other present day therapeutic procedures besides operation include roentgen treatment and heliotherapy, the last named a prolonged and expensive but successful method.

In the other woman's clinic of the university the Charité the frequency of genital tuberculosis could not be observed. Perhaps also regional differences count for something in the dissemination of this disease at any rate the matter of fact here related remains important.

ITALY

(From Our Regular Correspondent)

Jan 15, 1936

The National Antituberculosis Congress

The fifth national congress for the crusade against tuberculosis was recently held in Rome under the chairmanship of Prof. Eugenio Morelli at the Istituto Carlo Forlanini. Professor Besançon, secretary of the International Union Against Tuberculosis, was present.

Prof. Bruno Biagi, president of the Istituto della previdenza sociale spoke on insurance in tuberculosis and concluded that farmers, government officials and priests should be included in the benefits of compulsory insurance. This would diminish the expenses of provincial antituberculosis centers, which could then intensify the work in the dispensaries for the prevention of the disease. Another aspect in the problem of prevention of tuberculosis is the care of tuberculous mothers and their children.

The official topics dealt with the biologic, clinical, therapeutic and social aspects of tuberculosis.

Professor Petragliani, general director of public health, spoke on the chemical constitution of the tubercle bacillus. He studied the phenomenon of the decomposition of tubercle bacilli in their chemical constituents when treated by phenol, acetone and alcohol-ether. The particles of tubercle bacilli thus obtained have been tried with encouraging results as vaccines for the diagnosis, prevention and treatment of tuberculosis. They preserve antigenic characteristics, as has been proved by the results of the Bordet-Wassermann reaction, and lose them permanently, as has been proved by the results of tests *in vitro* and *in vivo* by the addition of small amounts of sulfuric acid to the vaccines.

Professor Michelli of Turin, with the roentgenologic collaboration of Professor Lupo, spoke on endogenous reinfection and exogenous superinfection in postprimary pulmonary tuberculosis. Exogenous superinfection is generally produced, as primary tuberculosis, by the air through the bronchial route. It is independent in its effects, of the origin of the inhaled tubercle bacilli. The statement that exogenous superinfection follows a direct route from the cervical lymphatic ganglions of the lung through certain routes pathologically opened, such as furuncles, eczema and the tonsils, has not been proved. The speaker believes that the name "postprimary tuberculosis" should be used instead of tuberculosis in adults, because the latter designation fails to make any reference to the primary infection. The clinical and roentgen examination of postprimary tuberculosis, verified by observations of the pathologic anatomy, have nearly settled the question of an endogenous origin of the condition. This statement is supported by the following facts: the persistence of the satellite ganglions of the primary infiltration as an almost constant source of infection and the frequency of tuberculous bacillemia and of the development of new pulmonary foci from a bacillary dissemination through the blood. The origin of phthisiogenic infiltration is now considered endogenous, the infiltration taking place through the blood, either directly or indirectly. In cases of the last mentioned group the infiltration takes place in clinically inactive old lesions, either healed or calcified. With regard to exogenous superinfection in persons clinically healthy who have overcome the primary infection the results of recent researches prove that the danger of contagion exists also for those persons. The statement is confirmed by the increased frequency of infection in various familial and epidemiologic groups as well as by the frequent appearance of new lesions, including early tuberculous infiltration which are revealed by the roentgen examination of the thorax of these persons. The occurrence of a double infection in human beings with tubercle bacilli of the bovine and human types which is rare, supports the theory of exogenous superinfection. Therefore both the exacerbation of pulmonary tuberculous lesions and endogenous reinfection do not exclude the possibility of

William P. Orr Jr. * Lewes, Del., University of Pennsylvania Department of Medicine, Philadelphia, 1884, past president of the state board of health and the Sussex County Medical Society, for many years a member of the board of education, formerly medical officer in charge of the Delaware Breakwater Quarantine Station of the U. S. Public Health Service, on the staff of the Beebe Hospital, aged 78, died, January 9, of heart disease.

John Hamilton Revington, Chattanooga, Tenn., University of Tennessee College of Medicine, Memphis, 1914, member of the Tennessee State Medical Association and councilor of the third district, past president of the Chattanooga and Hamilton County Medical Society, fellow of the American College of Surgeons, served during the World War, aged 45, on the staff of the Baroness Erlanger Hospital, where he died, January 27.

Joseph Poland * Atlantic City, N. J., Jefferson Medical College of Philadelphia, 1907, past president of the Atlantic County Medical Society, for many years medical inspector of the city schools, at one time member of the medical staff of the Jewish Seaside Home, on the staff of the Atlantic City Hospital, aged 50, died, January 8, in the Temple University Hospital, Philadelphia.

James Newbegin Worcester, New York, Columbia University College of Physicians and Surgeons, New York, 1910, served during the World War, at one time assistant professor of clinical surgery, Cornell University Medical College, on the consulting staff of the Beekman Street Hospital, aged 51, died, January 10, in the Presbyterian Hospital.

Wilbur Warren Williams * Coldwater, Mich., Eclectic Medical College, Cincinnati, 1915, University of Michigan Homeopathic Medical School, Ann Arbor, 1921, president of the Branch County Medical Society, aged 44, on the staff of the Wade Memorial Hospital, where he died, January 11, of cerebral hemorrhage.

Rufus Lee Rigdon * San Francisco, Cooper Medical College, San Francisco, 1887, clinical professor of genito-urinary surgery, emeritus, Stanford University School of Medicine, member of the American Urological Association, consultant in urology to the Lane Hospital, aged 76, died, January 21, of lobar pneumonia.

Julius Andrew Mood, Sumter, S. C., Medical College of the State of South Carolina, Charleston, 1879, member of the South Carolina Medical Association, veteran of the Spanish-American War, formerly mayor of Sumter and chairman of the city school board, aged 81, died, February 7, of carcinoma of the rectum.

William Sheldon Coons, Yonkers, N. Y., University of the City of New York Medical Department, 1891, health commissioner of Yonkers, on the staff of St. John's Riverside Hospital and director of the Gray Oaks Hospital, aged 66, died, January 17, of embolism, following an injury to the knee.

Monroe Aaron Maas * Selma, Ala., Johns Hopkins University School of Medicine, Baltimore, 1911, served during the World War, on the staff of the Vaughan Memorial Hospital, formerly on the staff of the Selma Baptist Hospital, aged 47, died, January 29, of carcinoma of the pancreas.

Hamilton Rinde, Middletown, Conn., Johns Hopkins University School of Medicine, Baltimore, 1908, member of the American Psychiatric Association and the Connecticut State Medical Society, on the staff of the Connecticut State Hospital, aged 56, died, January 3, of coronary thrombosis.

Henry Theodore Pope * Lumberton, N. C., North Carolina Medical College, Davidson, 1894, past president of the Robeson County Medical Society, on the staffs of the Balser Sanatorium and the Thompson Memorial Hospital, aged 64, died, February 12, of influenza and heart disease.

Wiley Egan Woodbury * New York, Detroit Homeopathic College, 1906, member of the Michigan State Medical Society, served during the World War, formerly director of the Fifth Avenue Hospital, aged 55, died, January 6, in St. Joseph's Hospital, Phoenix, Ariz., of pneumonia.

Luther Lochman von Wedekind * Medical Director, Captain, U. S. Navy, retired, New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1886, entered the navy in 1888 and retired in 1928, aged 71, died, Nov. 24, 1935, of chronic myocarditis.

Francis Howard McCaskey * Rochester, Pa., Western Pennsylvania Medical College, Pittsburgh, 1901, past president of the Beaver County Medical Society, on the staff of the Rochester General Hospital, aged 64, died, Dec. 24, 1935, of cardiovascular renal disease.

Emmet Lee Fuller, Demopolis, Ala., University of Alabama Medical Department, Mobile, 1900, member of the Medical

Association of the State of Alabama, aged 61, died, January 16, in the Vaughn Memorial Hospital, Selma, following an operation for renal calculus.

Daniel Patrick Teter, Chicago, Baltimore Medical College, 1889, on the staffs of the Swedish Covenant Hospital and the Martha Washington Hospital, at one time medical warden at the Cook County Hospital, aged 69, died, January 9, of coronary thrombosis.

Daniel Carson Louchery, Clarksburg, W. Va., University of Maryland School of Medicine, Baltimore, 1880, member of the West Virginia State Medical Association, for many years a member of the staff of St. Mary's Hospital, aged 90, died, January 3.

Frank Edmund Luke, Chatham, Pa., Faculty of Medicine of Trinity College, Toronto, Ont., Canada, 1886, member of the Medical Society of the State of Pennsylvania, aged 72, died, January 7, of cerebral arteriosclerosis and cerebral hemorrhage.

Herbert Elias Kelly, Ida, Mich., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1899, member of the Michigan State Medical Society, aged 62, died, February 6, in St. Vincent's Hospital, Toledo, of heart disease.

Nelson Alonzo Pennoyer, Kenosha, Wis., Hahnemann Medical College of Philadelphia, 1870, formerly medical superintendent of the Pennoyer Sanitarium, now known as St. Catherine's Hospital and Sanitarium, aged 86, died, Dec. 26, 1935.

Rolland Vincent Turner, Aurora, Ill., State University of Iowa College of Medicine, Iowa City, 1925, member of the Illinois State Medical Society, aged 37, died, January 23, in the Misericordia Hospital, Milwaukee, of Addison's disease.

Emory Chester Rebman * Austin, Minn., Northwestern University Medical School, Chicago, 1909, president of the Austin Clinic, on the staff of St. Olaf Lutheran Hospital, aged 50, died, January 7, of pneumococcal meningitis.

Charles Fulton Parker, South Windham, Maine, University of Vermont College of Medicine, Burlington, 1898, member of the Maine Medical Association, aged 66, died, January 1, of pulmonary embolism and bronchopneumonia.

Edwin G. Rust * Cleveland, Homeopathic Medical College, Cleveland, 1880, member of the American Academy of Ophthalmology and Oto-Laryngology, fellow of the American College of Surgeons, aged 78, died, Dec. 29, 1935.

Albert Patrick O'Leary, Big Timber, Mont., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1898, member of the Medical Association of Montana, mayor of Big Timber, aged 64, died, Dec. 28, 1935.

William Henry Harrison Lewis, Fayette, Miss., Tulane University of Louisiana Medical Department, New Orleans, 1889, member of the Mississippi State Medical Association, aged 69, died, January 6, of pneumonia.

John Neuberger * Cleveland, Western Reserve University Medical Department, 1901, on the staffs of St. John's and the Lutheran hospitals, aged 60, died, January 8, of carcinoma of the rectum with metastasis to the liver.

George McIntyre Campbell * Akron, Ohio, Western University Faculty of Medicine, London, Ont., Canada, 1904, aged 55, on the staff of the People's Hospital, where he died, January 14, of cerebral hemorrhage.

Alfred Edwin Wadsworth, Malverne, N. Y., Long Island College Hospital, Brooklyn, 1891, died, January 15, in the Meadowbrook Hospital, Hempstead, of injuries received when he was struck by an automobile.

Samuel Cary Lightner, Kingston, Ohio, Medical College of Ohio, Cincinnati, 1886, aged 74, died, January 7, in the Mount Carmel Hospital, Columbus, following amputation of the leg for diabetic gangrene.

John Lewis Van Tine, Philadelphia, Hahnemann Medical College and Hospital of Philadelphia, 1893, associate professor of materia medica at his alma mater, aged 68, died, January 14, of cerebral hemorrhage.

James Townley Upjohn, Kalamazoo, Mich., University of Michigan Department of Medicine and Surgery, Ann Arbor, 1886, formerly state senator, aged 77, died, January 18, of angina pectoris.

William Edward McCaleb * Austin, Texas, Vanderbilt University School of Medicine, Nashville, Tenn., 1894, past president of the Travis County Medical Society, aged 64, died, Dec. 28, 1935.

William H. Wenger, Washington, D. C., College of Physicians and Surgeons, Baltimore, 1896, aged 66, died, January 29, of cerebral hemorrhage and cardiovascular renal disease.

Clarence Alfred Hanson, Chicago, Loyola University School of Medicine, Chicago, 1926, member of the Illinois State Medical Society, aged 39, died, January 21, of coronary thrombosis

William T Rathbun, Colusa, Calif, University of California Medical Department, San Francisco, 1892, member of the California Medical Association, aged 66, died, Dec 28 1935

William Henry Hopwood, Smock, Pa Jefferson Medical College of Philadelphia, 1877, member of the Medical Society of the State of Pennsylvania, aged 82, died, Dec 22, 1935

Henry Irving Marsden, Somerset, Pa, Medico-Chirurgical College of Philadelphia, 1898, member of the Medical Society of the State of Pennsylvania, aged 64, died, Dec 20, 1935

Ernest Kingsley McCown, Stanfield, Ore, University of Louisville (Ky) School of Medicine, 1925 served during the World War, aged 43, died, Dec 19, 1935, of pneumonia

James Henry Bogan @ Mackinac Island, Mich, University of Michigan Department of Medicine and Surgery, Ann Arbor 1892, aged 69, died, January 21, of pneumonia

James T Hammonds, Stanford Ky, Barnes Medical College, St Louis, 1902 member of the Kentucky State Medical Association, aged 55, died, Dec 17, 1935

Sylvan Elzanie H Rhodes, St Louis St Louis College of Physicians and Surgeons 1920, aged 35, died, January 7, in the Deaconess Hospital, of pneumonia

Adah Epperson, Indianapolis Northwestern University Woman's Medical School, Chicago 1901, aged 59, died January 15, of carcinoma of the stomach

Matthew T Love, Shelby, Ohio, Starling Medical College Columbus, 1884, aged 76 on the staff of the Shelby Memorial Hospital, where he died, Dec 23, 1935

James Douglas Robertson, Brookline Mass College of Physicians and Surgeons, Boston, 1894 aged 72, died, January 25, of hemiplegia and arteriosclerosis

Goldsmith P Robinson, Colorado Springs, Colo New York Homeopathic Medical College, 1877, aged 83, died, January 4, of carcinoma of the prostate

Henry Clay Grubb Linwood, N C, Temple University School of Medicine, Philadelphia, 1932, aged 29, died, February 10, of a self inflicted bullet wound

Albert G Grubb, Lagrange, Ind College of Physicians and Surgeons of Chicago, 1892, aged 73, died, January 12, of chronic nephritis and myocarditis

Clyde Leslie Van Patten, Cedar Rapids Iowa Hahnemann Medical College and Hospital, Chicago, 1911, aged 48, died, Dec 13, 1935, of pneumonia

Jacob Darwin Pines, Philadelphia, Hahnemann Medical College and Hospital of Philadelphia, 1892, aged 75 died, January 7, of coronary occlusion

Thomas Morris Strong, Boston, New York Homeopathic Medical College 1871, aged 87, died, Dec 17, 1935 in the Forest Hills Hospital

Otto William Staib @ Birtlett, Ill College of Physicians and Surgeons of Chicago 1888, aged 78, died, January 9 of coronary thrombosis

Browder Gaines, Louisville Ky Hospital College of Medicine Louisville, 1906, aged 58, died, January 3, in Adairville, of lobar pneumonia

Elmer E Dunkelberg, Wolfcreek Wis State University of Iowa College of Medicine Iowa City, 1886, aged 74 died, Dec 31 1935

Mansfield William Warner, Atlanta Ga Meharry Medical College Nashville, Tenn, 1914 aged 49, died January 9 of pneumonia

William Frederick Park, Amherstburg Ont Canada University of Toronto Faculty of Medicine 1893, aged 64 died January 3

Robert Harris Orr San Francisco University of California Medical Department, San Francisco 1896, aged 60, died Dec 26 1935

Frederick Henry Kalbfleisch Kitchener Ont Canada Trinity Medical College, Toronto 1888 aged 70 died Dec 13 1935

Theodore James Park, Amherstburg Ont Canada University of Toronto Faculty of Medicine 1879 died January 1

Isaac Newton Moyers Speedwell Tenn Tennessee Medical College Knoxville 1890 aged 76 died Dec 31 1935

Caroline Sophia Brown Toronto Ont, Canada, Trinity Medical College Toronto 1900 aged 73 died January 11

Correspondence

TREATMENT OF MILK ALLERGY

To the Editor —In his paper entitled "The Treatment of Milk Allergy and Its Basic Principles" (THE JOURNAL, Sept 21, 1935) Dr Bret Ratner makes several statements which either directly or by implication do not seem to be entirely in accord with fact Since these statements concern investigations by us we feel that a reply is necessary

On page 934 Dr Ratner says "Moro and Bauer first described cases of marasmus due to milk intolerance and showed that this condition could largely be attributed to immunologic disturbances resulting from the entrance of milk protein into the blood stream Schloss and Worthen and Schloss and Anderson in America amplified this concept"

In the paper quoted by Dr Ratner, Moro found that blood taken post mortem from an atrophic baby contained a high titer of precipitin for cow's milk. A reasonably literal translation of Moro's comments on this case is as follows: The presence of intensely active (*auksam*) precipitins allowed the conclusion that large amounts of milk protein must have passed through the intestinal wall into the blood stream at some time prior to death. He stated, however, that he was very unwilling to draw widespread conclusions from this one case and could not feel justified in concluding that the circulating cow's protein caused the atrophy or made it more severe. He expressed the opinion that it was much more likely that the atrophy and the increased permeability of the intestine for proteins were results of the functional gastroenteric disturbance or of the excessive overfeeding or both. It is therefore very difficult to understand how any reader of Moro's paper can state that he described a case of marasmus due to milk intolerance.

Bauer discussed in some detail the then current opinion of some pediatricians that cow's milk protein could prove harmful to infants. He stated that for two years he had investigated the blood of infants artificially fed or suffering from gastroenteric disease, with essentially negative results. He then described a positive precipitin test and positive complement fixation test for cow's milk protein in the blood of a 1,700 gram premature baby who had died after suffering from malnutrition and diarrhea. In commenting on his case, Bauer stated that he believed that he had proved conclusively the occurrence of foreign protein in the blood of an infant and that it remained for further investigations to determine definitely the pathologic significance of these results.

Here again one can hardly agree with Dr Ratner that Bauer described a case of marasmus due to milk intolerance or that this case any more than that of Moro showed that marasmus "could largely be attributed to immunologic disturbances resulting from the entrance of milk protein into the blood stream."

The statement of Dr Ratner that the investigations of Schloss and Worthen and of Anderson and Schloss amplified the concept which he, Dr Ratner, attributed to Moro and Bauer carries the intimation that these investigations were merely confirmatory to those of Moro and Bauer and permitted the same conclusions. Let us examine the facts.

The investigation of Schloss and Worthen was merely a demonstration of the passage of egg or milk protein through the intestinal wall of infants suffering from diarrhea or severe malnutrition. In the summary and conclusions of their paper, Schloss and Worthen say: "These results demonstrate the possibility that certain nutritional disorders in artificially fed infants may be due to the biologic character of the food although they obviously give no direct evidence to support such a view." Anderson and Schloss reported serologic evidence showing that cow's milk protein almost regularly entered

the circulation of marasmic infants fed on cow's milk. One of the most important differences in the results of their investigations from those of Moro and Bauer was dependent on technique. They found, as others, including Moro and Bauer had found, that satisfactory precipitin tests could not be carried out with ordinary milk, owing to its turbidity in even very dilute solution. Only very heavy precipitates could be detected. After experimenting with various preparations of cow's milk protein, Anderson and Schloss found that a commercial brand of dried fat free milk gave clear solutions in which slight precipitates could be detected readily. It was thereby possible to make repeated tests for precipitin in the blood of living marasmic infants over long periods of time in the attempt to relate the absorption of antigenic cow's milk protein to the nutritional state of the patient. Anderson and Schloss were able to demonstrate precipitin for cow's milk protein in the blood of eighty of the ninety-eight infants examined. We believe that this was more than a mere amplification of Moro and Bauer's postmortem demonstration of the enteral absorption of cow's milk protein by two infants who had suffered from marasmus in one case and diarrhea in the other. We also wish to emphasize that neither our results nor those of any one else have demonstrated a causal relationship between the enteral absorption of incompletely digested cow's milk protein and marasmus. Such absorption may be purely secondary or coincidental.

To the casual reader, Dr. Ratner's comment on the paper of Anderson, Schloss and Stuart in the last paragraph of page 936 might give the impression that he wishes to intimate that the experiments were performed with impure preparations of casein. In this paper investigations were reported demonstrating immunologic similarity of the casein of cows, human and goat's milk, which as a matter of fact had been demonstrated before.

The preparations of casein were carefully isolated by the method of Van Slyke and Baker and were, we believe, pure. But even if these caseins did contain traces of whey protein the conclusions would not have been altered. It is our belief that Dr. Ratner must have known this and that his reference to impure preparations did not refer to our experiments. We believe that he wished to imply that the statement in the opening paragraph of our paper that the immunologic relationship of the different caseins is of clinical importance must be wrong and that this belief on our part was probably due to the performance of skin tests with caseins contaminated with whey protein despite the fact that in the paper of Anderson, Schloss and Stuart no reference whatever was made to such tests. Assuming that our interpretation of Dr. Ratner's meaning is correct, we wish to make the following comments:

We agree entirely with Dr. Ratner that the whey proteins are of paramount importance in idiosyncrasy to cow's milk and only with comparative infrequency is casein at fault, but what we do wish to take issue with him on is the insinuation that our belief that idiosyncrasy to casein may be of importance is due to the fact that we have been misled by tests with impure casein. We fully realize the danger of drawing erroneous conclusions by the use of contaminated test preparations but we have from time to time carefully studied cases of idiosyncrasy to casein in which such criticism is patently invalid. Three cases will be cited briefly.

CASE 1—A breast fed baby, aged 3 months, developed eczema when he was 2 months of age. Scratch tests with a 1 per cent solution of casein in twentieth-normal sodium hydroxide caused very marked reactions evidenced by wheals varying from 2 to 3 cm in diameter. (This casein was prepared by precipitation with dilute acetic acid, repeated washing of the centrifuged precipitate with distilled water, solution of the precipitate in a weak solution of sodium hydroxide and reprecipitation by acetic acid. Washing of the precipitate solution by aid of sodium hydroxide and reprecipitation by acetic acid as outlined were

carried out five times. The final precipitate was carefully washed with distilled water, centrifuged, washed with alcohol and ether and dried in a current of warm air.) A 1 per cent solution of albumin from cow's milk gave on one occasion a negative scratch test and on two occasions equivocal reactions. (This albumin was prepared by first removing the casein from diluted cow's milk by precipitation with acetic acid. The filtrate was centrifuged to remove small particles of casein and the globulin precipitated by one-half saturation with ammonium sulfate. The albumin was thrown down by full saturation with ammonium sulfate. The resulting precipitate was purified by solution in distilled water and reprecipitation by saturation of the resulting solution with ammonium sulfate. This procedure was repeated three times. The final precipitate was dissolved in the smallest possible amount of distilled water, dialysed to remove ammonium sulfate, reprecipitated by pouring into a large volume of acetone and dried in a current of warm air.) A scratch test with casein from goat's milk in 1 per cent solution caused a wheal 2 cm in diameter. A 1 per cent solution of albumin (prepared by the same technique as outlined for cow's milk) from goat's milk provoked a slight erythema about 0.5 cm in diameter but no wheal. It therefore seems evident that this patient showed cutaneous sensitivity to casein not due to contamination with albumin.

CASE 2—A boy, aged 2 years, was known to be sensitive to cow's milk. When cow's milk was ingested the patient usually developed slight urticaria around the mouth, at times generalized urticaria and on one occasion an attack of asthma. The symptoms were previously more severe than at the time when the patient was first seen. Scratch tests gave very marked reactions to cow's milk.

Marked cutaneous reactions were caused by scratch tests with a 1 per cent solution of casein. As a rule, an irregular wheal from 1 to 2 cm in diameter surrounded by a zone of erythema occurred. Skin reaction to lactalbumin was much more intense than to casein. Usually the wheals were from 3 to 4 cm in diameter and were surrounded by a wide zone of erythema. It so happened that the sample of casein used in these skin tests had been employed in other investigations and its purity was established by immunologic tests. These tests were briefly as follows:

One cc of a 1 per cent solution of this casein was given to each of four guinea-pigs by intraperitoneal injection. Twenty days later the intraperitoneal injection of 3 cc of a 1 per cent solution of cow's milk albumin did not cause anaphylactic shock, but an injection of 3 cc of a 1 per cent solution of casein two days later caused severe shock.

This casein did not cause anaphylactic shock when given by intraperitoneal injection to three guinea-pigs sensitized nineteen days before the milk albumin. Their sensitization to milk albumin was demonstrated by the occurrence of shock when given an intraperitoneal injection of albumin from cow's milk two days later.

Although this patient was markedly sensitive to cow's milk albumin, it seems very clear that he was also sensitive to casein from cow's milk.

CASE 3—A baby, 3 months of age, had been entirely breast fed. Cow's milk was offered at this time as a supplementary feeding. Only about 30 cc of 50 per cent dilution of cow's milk was taken. Within a few minutes he vomited. This recurred several times within an hour and soon severe diarrhea developed. Seven profuse, watery stools were passed within two hours and the baby showed moderate prostration. Similar symptoms appeared after each attempt to feed cow's milk even though as little as 20 cc was taken. There were no cutaneous or respiratory manifestations. On two occasions, goat's milk caused the same disturbances. All skin tests to both cow's and goat's milk were negative.

In the attempt to determine the milk proteins that caused the reaction the following experiments were made:

1 The ingestion of 5 cc of a 1 per cent solution of the albumin of cow's milk caused severe gastrointestinal symptoms. (This albumin was prepared by the same procedure as that used in case 2.)

2 The ingestion of 30 cc of a 1 per cent solution of cow's milk casein that had been serologically tested and was of the

same batch that caused vomiting and diarrhea in case 2. This test repeated five days later was followed by the same symptoms. It seems quite evident that this patient was sensitive to both albumin and casein from cow's milk.

In spite of Dr Ratner's forceful expression of his views, we believe that we have sufficient evidence to warrant the conclusion that human beings can be allergic to pure casein from cow's milk.

OSCAR M. SCHLOSS, MD
ARTHUR F. ANDERSON, MD
New York

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

URTICARIA OF UNKNOWN ETIOLOGY

To the Editor—A white man aged 28, a service station attendant, first came to me on April 30 with a case of hives. He had the first attack six years ago and another attack one year later thereupon skipping two years before another attack occurred. On previous attacks injections were given by one of our leading dermatologists and the attack subsided. No result was obtained this time. The patient changed doctors and was given autohemie therapy (two injections in each arm). No change in the condition resulted for better or worse. He has been taking amylal and ephedrine and also phenobarbital with no result. He was tested for allergy and responded to nearly everything but I do not believe that he had received any of the extracts. At first the wheals were large measuring from 1½ to 2 inches in diameter. Now they are smaller measuring perhaps one half to three fourths inch. They last only about half an hour and disappear. When new crops come out they usually come out in the same places as the previous ones and appear to be following a nerve. He has two that appear quite regularly one in the bend of each elbow and one on the palmar surface of the left wrist. They change from white to red, itch and burn, are worse after a hard day's work with interrupted sleep and appear to be better that is are not so numerous or may not appear at all if he has a good night's sleep. My first prescription for him was resorcinol 3 grains (0.2 Gm.) in sufficient water to dissolve and tincture of nuxvomica 2 drachms (7.5 cc.) in elixir of lactopeptin sufficient to make 4 ounces (120 cc.) to be taken in a dose of 1 drachm (4 cc.) every three hours. This was followed by improvement but from that time on nothing seems to have made any impression. He is now taking A. M. S. solution (Raymer) which contains potassium arsenite, potassium chlorate, potassium sulfate and dilute hydrochloric acid. He takes this in 15 drop doses three times a day. There is nothing in his diet that seems to make any difference. He has eliminated eggs, milk, cheese, tomatoes, shell fish and various other articles but there has been no difference in his condition. He has noticed that playing golf seems to bring on an attack while he is playing. Any information you may be able to give will be greatly appreciated.

MD, New York

ANSWER—It must be stated in the beginning that the determination of the etiology of a given case of urticaria by means of skin reactions is usually disappointing. Positive reactions of various kinds are usually found because the individual with hives is usually an allergic individual. However, the antigens that give the positive reactions in a given patient are not necessarily the causative factors of the urticaria. It should be remembered that the materials causing the urticaria, particularly foods, may be ingested many hours before symptoms develop. Since that is the case, it should not be expected that applying such substances by means of skin tests will be followed by positive reactions within the comparatively short time during which a skin test is observed. Besides the skin test affects the superficial skin layers while hives are produced when the antigen reaches the lower skin layers.

The usual therapeutic measures for urticaria have been fairly well carried out in the patient under discussion. In some patients symptoms are prevented by taking peptone mixtures half an hour before meal times. Elimination diets are sometimes successful.

It seems significant in the history that the patient's symptoms are aggravated by a hard day's work, interrupted sleep and playing golf. He is better after a good night's sleep. All this indicates that the patient's symptoms originate during physical effort, for instance during golf and the exertion of a hard day's work, and that these manifestations are improved by rest. This agrees pertinently with Duke's contribution to physical allergy. He has demonstrated that many of the manifestations of allergy can be produced by hypersensitiveness to physical agents such as heat or cold. Allergy on the basis of heat or cold may reproduce in all particulars the manifestations

of allergy due to foods, inhalants and pollens. This conception suggests that the patient should be acclimated to heat by alternate exposures to heat as from a heat lamp and cold by ice rubs, the process being repeated several times and the treatment being carried out daily.

CHRONIC GONORRHEAL INFECTION

To the Editor—A married man about 30 years of age contracted a gonorrheal infection four years ago. He went to his doctor who diagnosed it as mentioned. Treatment consisted of tablets and capsules by mouth and solution for home irrigation. The discharge ceased after a few weeks. The following September the discharge again appeared and it has done every September since the original infection. Last September was my first contact with the patient. The discharge looked to be quite typical but the state laboratory returned a consistent negative. However under National Drug Neisser Combined Vaccine the trouble cleared. Now for the third successive September the discharge has appeared—a rather thick yellow nonmucous secretion. I have sent smears to the state laboratory and plan to send at least three. He states that there has been no infection other than the primary one. Of course my impression is that the condition is a chronic gonorrheal infection. Is this reasonable? Assuming this diagnosis to be correct what is the latest accepted treatment? How can the annual September flare up be accounted for?

HARRY W. PERRIN, MD, Lisbon, N. H.

ANSWER—The assumption that the patient in question is suffering from a chronic gonorrheal infection may be correct. The exact method of examination of the discharge is not stated. Recent experience has shown that cultures obtained from the urethral discharge, when the material is obtained with proper precautions, are accurate in more than 90 per cent of cases. The result of such a culture would therefore be of great value in this case, since smears frequently are negative when cultures are positive.

It would be logical to assume that there is a chronic prostatic infection present, which is keeping up the recurring discharge. A study of the prostatic secretion should be made as well as a urethroscopic examination and a thorough search for foci in the teeth and tonsils.

In case evidence of prostatic infection exists, the usual treatment consisting of vigorous prostatic massage and instillations into the deep urethra, usually brings good results. An abscess associated with first infection of the prostatic ducts may be a factor. In the hands of most observers vaccine has not been found to be of great therapeutic value. In case of persistent gonorrheal infection hyperpyrexia, particularly with the Simpson-Kettering apparatus, may be indicated. This form of treatment has been highly successful in clearing up persisting infection with *Neisseria gonorrhoeae*.

The seasonal recurrence of urethral discharge is frequently observed and is difficult to explain. However there must be individual rather than climatic factors present to account for it.

LIMBER NECK AND POLIOMYELITIS

To the Editor—Can the disease in fowl commonly known as limber neck be transmitted to man? If so is the result similar to acute poliomyelitis? I have seen demonstration of transmission from fowl to small animals with resulting paralysis of their hind limbs. From this I had the impression that the two diseases were identical and on this ventured a prediction that a family of children having played in a chicken yard in which limber neck existed would become afflicted with the disease. I wasn't surprised when after a few weeks three of the children developed infantile paralysis. Since then I have seen another case of the disease in a young girl and on investigating found chickens with limber neck in a neighbor's yard. It is difficult for me to believe that this experience will have to be explained as a matter of coincidence. I should like to know whether it has been definitely established that they are two distinct diseases.

GUSTAV LUDWIGS, MD, East St. Louis, Ill.

ANSWER—Limber neck is a condition commonly seen in chickens. It is characterized by a paralysis with a peculiar weakness of the neck muscles and is due to the botulinus toxin.

Graham Brueckner and Pontius (Bull. 207, Kentucky Agricultural Station, June 1917) have reported a number of outbreaks of so called forage poisoning or cerebrospinal meningitis of horses due to the toxin of *Clostridium botulinum*. It was further shown that the toxin of one type of *Clostridium botulinum* causes cases of limber neck in chickens. Chickens are readily susceptible to the toxin of the type A organism, developing limber neck but they are refractory to the type B toxin. *Clostridium botulinum* is widely distributed in nature and is found chiefly in the soil, in the feces of hogs in moldy hay and in damaged fruits and vegetables. Type A organisms are more frequently found in the western part of the United States and type B in the eastern part.

Epidemiologic evidence from time to time has seemed to implicate animals in the spread of some of these infections. Poliomyelitis has been associated in various reports with dogs,

cats, chickens and colts T G Hull (Diseases Transmitted from Animals to Man, Springfield, Ill, C C Thomas, 1930, p 247) investigated an epidemic of paralysis among hogs on a farm where two children were sick with poliomyelitis, but histologic examination of the spinal cord of the hogs revealed no evidence to indicate that the disturbance was poliomyelitis. In another instance the examination of the colts proved that the paralysis was apparently due to a nutritional deficiency. W H Frost (Bull 90, Hyg Lab U S P H S 1914) investigated the connection of paralyzed dogs, chickens and rabbits with the epidemics of poliomyelitis in Iowa in 1910 and in Cincinnati in 1911 but found no evidence to support the contention that such animals were suffering from the disease or acting as carriers.

From the foregoing it is apparent that the paralysis in chickens is due to the botulinus toxin and is independent of the paralysis due to poliomyelitis seen in children. However, it is possible that a paralysis in children simulating poliomyelitis may be due to the same toxin that is producing the paralysis in chickens or the so-called lumber neck.

GASTRO-INTESTINAL ABSORPTION—ABSENCE OF PAIN IN ULCER WITH ACHYLIA

To the Editor—I would appreciate reference information as to research work done on the following subjects: 1 Shortages of resorption of products of digestion in either health or disease. 2 Why is an achylic stomach with an ulcer free from pain?

ARTHUR A KIRCHNER M D Los Angeles

ANSWER—1 There has been such extensive literature published on "absorption from the gastro-intestinal tract during health and disease" that it is possible to cover the subject but briefly in these columns.

Following the observations of Beaumont (Experiments and Observations on the Gastric Juice and the Physiology of Digestion, Plattsburgh 1833) that gastric acidity decreased with infection or fever, patients were starved as a rule. In 1912 Eugene F Du Bois (The Absorption of Food in Typhoid Fever, *Arch Int Med* 10 177 [Sept.] 1912) confirmed work published previously by the Russians and demonstrated the advantages of a high caloric and nutritious diet for typhoid patients. This changed the previously accepted dictum of "starve a fever" and stimulated study of gastro-intestinal absorption under varied conditions. The following references are submitted as a preliminary bibliography.

- Bliss M A The Influence of Mind on Digestion *Psychotherapy* 3 48 1909
Thompson W G Practical Dietetics with Special Reference to Diet in Disease New York and London D Appleton & Co 1909 p 954
Bichel A Ueber die Grundlagen der Diätetik bei Verdauungskrankheiten *Med Klin* 1910
Lusk Graham The Elements of the Science of Nutrition ed 2 Philadelphia and London W B Saunders Company 1909
Arany S A The Assimilation of Carbohydrates in Health and Disease *Med Press & Circ* 89 330 1910
Keller W Ueber enterale Resorption *Klin Wchenschr* 11 855 (May 14) 1932
Balkin B P Die aussere Sekretion der Verdauungsdrusen Berlin Julius Springer 1928
Leyne V E Science of Nutrition Application to Clinical Medium *Nebasta M J* 15 147 (April) 1930
Childrey J H Alvarez W C and Mann F C Digestion Efficiency with Various Foods and Under Various Conditions *Arch Int Med* 46 361 (Sept.) 1930
Bloomfield A L and Pollard W S Gastric Anacidity Its Relations to Disease New York Macmillan Company 1933
Alvarez W C The Mechanics of the Digestive Tract ed 2 New York Paul B Hoeber Inc 1928
Bridges M A Dietetics for the Clinician Philadelphia Lea & Febiger 1933
Alvarez W C Nervous Indigestion New York Paul B Hoeber Inc 1931

2 The causes of ulcer pain are not completely understood as yet. Alvarez (The Mechanics of the Digestive Tract) summarizes the more commonly accepted theories as follows:

Carlson (Contributions to the Physiology of the Stomach. The Origin of the Epigastric Pains in Cases of Gastric and Duodenal Ulcer, *Am J Physiol* 45 81 [Dec.] 1917) believes that an increased sensitivity of the nerve endings changes the normal hunger contraction distress to the pathologic hunger pains associated with ulcer.

Palmer (The Mechanism of Pain in Gastric and Duodenal Ulcers, *Arch Int Med* 38 603 [Nov.] 1926) concludes that in 90 per cent of the patients the chemical irritation (hydrochloric acid) is the only factor producing the ulcer distress in the remaining 10 per cent muscular contractions may be a factor.

It is (Contributions to the Physiology of the Stomach. The Causes of Gastric Secretion Their Practical Significance and the Mechanisms Concerned THE JOURNAL, Sept 19 1925, p 877) theorizes that the intermittent type of ulcer pain is prob-

ably due to peristalsis or local spasm occurring at the site of the ulcer in muscle of changed tonicity. The continuous type of distress is due to congestion, edema and inflammatory reaction about the ulcer, all of which lower the threshold for stimuli. The role of the acid is to irritate the nerves and to increase the edema about the ulcer.

With these theories as a basis, it may be concluded that there would be no ulcer pain in achlorhydric ulcer patients because acid irritation would be absent.

SENSITIVITY TO PHOTOGRAPHIC SOLUTIONS

To the Editor—Please let me have any available literature on dermatitis resulting from contact with elon hydroquinone chrome alum hardener and acid hardening fixing bath used in the developing of photographic plates. The solutions used in the case under discussion were:

- | | | |
|---|-----------------------------|----------------|
| 1 | Elon hydroquinone developer | |
| | Water | 15 liter |
| | Elon | 31 Gm |
| | Hydroquinone | 59 Gm |
| | Sodium sulfite | 900 Gm |
| | Sodium bisulfite | 21 Gm |
| | Sodium carbonate | 115 Gm |
| | Potassium bromide | 17 Gm |
| | Borax | 80 Gm |
| 2 | Chrome alum hardener | |
| | Water | 4 liters |
| | Potassium chrome alum | 120 Gm |
| 3 | Acid hardening fixing bath | |
| | Water | 2 liters |
| | Sodium thiosulfate | 480 Gm |
| | Sodium sulfite | 30 Gm |
| | Acetic acid | 96 cc 28% pure |
| | Potassium alum | 30 Gm |

The patient working in these solutions with unprotected hands first noticed a rash on the hands and forearms. The rash rapidly spread to the rest of the body and was accompanied with severe itching. The rash resembles that of pityriasis. After ten days the rash is fading and the hands and fingers are scaling extensively.

JAMES L HACKETT M D Emporium Pa

ANSWER—Sensitization to almost any substance can occur and almost any of the ingredients mentioned may be suspected but most of them are rarely troublesome, so that they are not likely suspects. Of elon, a brand of metol, and of hydroquinone no such kind words can be said. They should be suspected and tested first. Make a patch test by wetting a small piece of absorbent cotton in a solution of two parts of elon to 1,000 parts of water, place it on apparently normal skin of the patient, cover it with gutta percha, oiled silk or oiled paper, and fasten with adhesive tape. Make a similar patch test with hydroquinone four parts per thousand parts of water. The same may be done with any other ingredient that may be suspected, using about the strength in which it is present in the mixture. Allow these to remain for forty-eight hours unless marked itching or burning develops in a shorter time. Remove the patches and read the results. A decided dermatitis under the pledget of cotton is recorded positive. Dermatitis under the edges where the covers touched the skin or under the adhesive tape, indicates sensitization to these substances.

If any of the ingredients of the developing or hardening baths give a positive reaction, it must be tested again. A second positive reaction indicates the offender.

Because metol is so often the cause of such a dermatitis, kodolone, *p* amino phenol oxalate, a substitute recommended by the Eastman Kodak Company, the makers of elon may well be tested at the same time in the hope that it will be found nonirritating. The metol-hydroquinone developer is so much better than most others that photographers will try in many ways to continue its use, even though they are sensitized to it.

Bathing the hands frequently in 10 per cent aqueous acetic acid solution or rubbing them several times a day with a mixture of 32 parts of 28 per cent acetic acid, 16 parts of table salt and 64 parts of water is said to act as a preventive. Covering the hands with a thin film of ointment, paraffin or collodion has been tried with only partial success. The covering is imperfect and often makes trouble by smearing the films. For severe cases rubber gloves may be necessary. After removing them the application of 10 per cent acetic acid solution, or a 0.5 per cent solution of salicylic acid in 50 per cent alcohol may be helpful.

Freund (Prevention of Photographer's Dermatitis, *Wien klin Wchenschr* 46 41 [Jan 13] 1933) mentions the difficulties and uncertainties of these methods and suggests instead of them a loop of string at two adjacent corners of the film. The technician handles the film by these loops, fastens them to a post on the especially made tray to keep them dry, and hangs

the film for drying by one of these loops. The author pictures and describes a mechanical device which he claims makes possible the formation of such loops very quickly, even in darkness. It is a simple and inexpensive method and deserves trial.

Treatment is not practical so long as exposure is repeated. After thorough rinsing in an acid solution, solution of aluminum acetate may be applied as a cool, wet dressing. The Eastman company recommends a bath of 100 parts water and two parts each of potassium permanganate and concentrated sulfuric acid. After this the stain may be removed with a solution of 2 per cent oxalic acid in water.

POSSIBLE RAYNAUD'S DISEASE

To the Editor—A woman aged 39, has what I am quite certain is early Raynaud's disease. The hands become painful and white when suddenly exposed to cold or immersed in cold water. The nails of the middle and ring fingers of both hands appear dark, dull and lifeless and have not had to be cut for about three months. The nails of other digits grow very slowly. The patient is in excellent health in other respects. I should like to know the latest and best treatment. How about foreign protein therapy or cervical sympathectomy? Kindly omit name.

M D Michigan

ANSWER—The diagnosis of Raynaud's disease in this case is open to some doubt. The attacks of ischemia on exposure to cold are typical of this disease. However, usually between the attacks the fingers are normal in appearance and in texture and in finger-nail growth. The fact that the patient is a woman favors the diagnosis of a vasospastic disorder rather than a diagnosis of organic occlusive disease of the vessels of the hands. It would be important to determine whether pulsations of both ulnar and radial arteries are present. If these are open, and if exposure of the hands to warmth restores them to a fairly normal condition a diagnosis of Raynaud's disease would be tenable. If restoration does not occur, one would suspect organic closure of the digital arteries. The patient seems too young to have arteriosclerosis obliterans. Thrombo-angitis obliterans is extremely rare among females. Embolic occlusion would have to be ruled out. If the condition is progressive, causing disability, sympathetic ganglionectomy would probably offer the best chance of ultimate relief. If surgical operation is not advisable, contrast baths, postural exercises, protection of the digits, injection of foreign protein and fever therapy might be used.

CEREBROSPINAL SYPHILIS

To the Editor—A white man aged 40, contracted syphilis six months ago. He received eight injections in the arm and none in the hip. He was then instructed to rest for six weeks. I saw him toward the close of this rest period for the first time. He had had a severe headache for several days. Examination showed a secondary optic atrophy. The spinal fluid was under greatly increased pressure and was clear. It contained 24 cells per cubic millimeter, mostly small lymphocytes and showed a positive Pandy, a one plus Kahn and a one plus Wassermann reaction. The blood Wassermann reaction was two plus and the Kahn two plus. The patient had gonorrhea about ten years ago. No blood tests were taken then. Is it possible that his present cerebrospinal syphilis is a result of an internal chancre at the time of the gonorrhea or is it more likely a recent infection with inadequate treatment? I started him on mercuric succinimide intramuscularly, one fifth grain (0.013 Gm.) three times a week. Do you think iodides are indicated simultaneously or would you wait and how long? When do you think it would be safe to start neosarsphenamine or do you believe tryparsamide would be better? I was planning a course of twenty injections of mercuric succinimide, one fifth grain three times a week, then bismuth salicylate 2 grains (0.13 Gm.) twice a week for twelve injections and then ten injections of neosarsphenamine starting with 0.15 Gm. and gradually increasing every five days. He has high myopia and an ophthalmologist will determine his visual fields shortly. How often do you think it necessary to recheck his visual fields? Would iodobismutol be better than bismuth salicylate? Kindly give prognosis. Please omit name.

M D Illinois

ANSWER—The symptoms seem to indicate that there was an invasion of the central nervous system during the secondary stage of the patient's syphilis. One must assume that there has been inadequate treatment and institute intensive antisyphilitic therapy. Iodides should be used simultaneously, preferably in the form of intravenous sodium iodide. It is far better to use neosarsphenamine than tryparsamide in this type of syphilis. Bismuth salicylate is perhaps better than iodobismutol. It is quite likely that the disk changes are not due to secondary optic atrophy but to myopia.

The visual fields need not be regularly checked unless tryparsamide is used.

The prognosis cannot be determined thus early, but active treatment at the present time would insure the best possible chances for the prevention of the severe tertiary neurosyphilis.

IDIOPATHIC HYPERTENSION IN PREGNANCY

To the Editor—Three months ago a multipara aged 26 came to me for antepartum examination. The last menstrual period was March 15. There are no present complaints. The patient has been feeling well since the last period. She had chickenpox in childhood but no other diseases or serious illnesses. She has been subject to occasional attacks of nausea and vomiting associated with headache since early childhood but these were of short duration. The first pregnancy was four years ago. When examined first in the early months of pregnancy her physician mentioned that her blood pressure was high; she thinks around 180. No treatment was instituted, however, and pregnancy continued normally with no abnormal symptoms. She was delivered spontaneously at term after about eight hours of labor. Her health was good until the second pregnancy two years ago. During this time she had occasional attacks of headache and malaise but did not consult a physician until the end of the eighth month when vaginal bleeding was followed in a few hours by stormy labor pains. The bleeding and pains continued for about twelve hours when she was delivered of a dead fetus by forceps. Her health has been good until the present time. Examination when the patient was first seen showed the blood pressure to be 210 systolic, 120 diastolic. The heart was slightly enlarged to the left. A blowing systolic murmur was heard at the base and the apex. The heart rate was 90. There was no swelling of the ankles and there were no visual disturbances. The twenty-four hour urine showed a volume of 40 ounces, color light straw, specific gravity 1.020, albumin and sugar negative. Blood count and hemoglobin were normal. The patient was put to bed for two weeks and given three quarts of milk each, twenty-four hours orange juice and viosterol. At the end of two weeks the blood pressure was 190/120. She was allowed to be up about the house for about two hours a day and instructed to take a low protein and low salt diet. The blood pressure slowly rose to its original level in three weeks. She was put back to bed and allowed up only for meals. A low protein diet was continued. The bowels were kept regular with liquid petrolatum and milk laxatives. Bismuth subnitrate was given in a dosage of one teaspoonful of the powder twice daily. The patient continues to feel well except for an occasional headache followed by vomiting which promptly relieves it. The twenty-four hour output of urine averages around 66 ounces, albumin and sugar are negative, with an occasional hyaline cast. The specific gravity remains around 1.020. The occasional headache is described by the patient as feeling as if the head was too full. The blood pressure remains from 200 to 210/120. There is still no swelling of the ankles, dizziness or visual disturbances. Blood chemistry has not been done. I would appreciate your suggestion as to further treatment and the prognosis of this case. If eclampsia does not come on before the onset of labor I am afraid that increased blood pressure during labor may cause a cerebral hemorrhage.

M D Arizona

ANSWER—The patient evidently suffers from a condition that is being called, for the want of a better name, idiopathic hypertension, and in all probability a chronic cardiovascular disease is at the root of her trouble. The pregnancy seems to aggravate the existing condition and probably the patient is shortening her life by repeated gestations. The toxemia and premature labor of her second pregnancy, which probably ended with abruptio placentae, confirm these suspicions. Many accoucheurs would empty the uterus in such a case as this regardless of the period of development of the fetus, in order to prolong the woman's life. Recommendations for this particular case are absolute rest in bed, stimulation of diuresis by means of 250 cc. doses of 25 per cent dextrose intravenously and a diet without any salt whatever and consisting of fruit juices, nonprotein vegetables and cereals with from 25 to 30 Gm. of animal protein daily. When the child is viable a low or cervical cesarean section should be done under local anesthesia with Madlener's method of sterilizing the patient—crushing and ligation of the tubes.

RELIEF OF SYMPTOMS AT MENOPAUSE

To the Editor—A woman aged 35, the mother of one child, had both ovaries removed on account of cysts. I anticipate menopausal symptoms and wish to know what treatment you would advise to prevent this. Will she experience any sexual sensation? Do not mention name.

M D Oklahoma

ANSWER—Most women who have symptoms of the menopause can be relieved of some of their distressing disturbances. Some women can be relieved of all their symptoms, whereas other women are refractory to all treatment. The product that is helpful for most women who are in the menopause is an estrogenic substance. The commercial preparations of this product are known by such names as theelin, ammiotin, progyon and menformon. The best way to administer the substance is by hypodermic injection deep into the muscle (the gluteus muscle preferably). These products can also be administered by mouth but the dose must be five times as great as when given intramuscularly. It is best to start with hypodermic injections of about 200 rat units every second day. After a number of injections have been given, the physician should increase or decrease their frequency and strength, depending on the effect the substance has on the disturbing symptoms. In nearly all cases in addition to the estrogenic substance it

is advisable to prescribe a mild sedative such as the bromides or phenobarbital. Many women who undergo the menopause retain their sex desires and sex gratification whereas others lose it temporarily or permanently. If a woman broods over this or over the change of life in general a few intimate conversations concerning a more optimistic view on life may prove helpful.

TREATMENT OF VARICOSE VEINS WITH ULCERS

To the Editor—In the treatment of varicose veins Unna's paste has been a standard remedy for many years. The directions for applying this paste state that it should be applied the entire length of the veins and that the paste should also be spread over the ulcerated regions unless there is too much weeping from the ulcer or ulcers. Of course the beneficial effect of the paste on an ulcer from which there is no great amount of fluid discharging appears obvious while the use of an elastic bandage such as is put over the paste and the gauze covering the paste can also be understood as a useful procedure but of what benefit is it to apply the paste along the entire course of the vein when over its greatest length there are no ulcers nor any suggestion of an ulcer likely to develop? Also when an ulcer is weeping excessively so that the Unna's paste cannot be applied over it what is the theory underlying the benefit that accrues to the ulcerated regions when only the non-ulcerated regions are covered with the paste? Also when it is intended to institute obliterative treatment is it necessary to wait until all ulcers are healed before the treatment can be started? I know that there are a great many solutions recommended for injection in obliterative treatment and I have used a mixture of magnesium sulfate and sodium chloride with quite good results in all except one case out of a series of six the case that showed unsatisfactory results being one in which there were badly twisted veins which I finally had to ligate. As my experience with these cases was quite concentrated all within a short time and about four years ago may I ask whether in the meantime any other substance or substances besides the mixture mentioned and the often mentioned quinine and urea hydrochloride has been proved more and sufficiently often successful that such may be considered a standard treatment in the light of present knowledge.

M D Illinois

ANSWER—The correspondent would be interested in a pamphlet issued by the Committee on Varicose Veins of the American Medical Association based on the material shown at the Scientific Exhibit in Philadelphia. Unna's paste must be applied from the toes to the knee in every case. It affords elastic support to the dilated veins prevents back pressure and protects the limb from too much edema. Ulcers below veins with incompetent valves heal much faster when the stagnating column of blood is held back by the even pressure of a bandage or boot. When the ulcer is acutely inflamed or when secretion is active it is wise to apply several layers of gauze or a marine sponge over the ulcer, not only for even pressure but also to dispose of the secretion. In such cases the boot may have to be exchanged every four or five days until the secretion diminishes. The injections may be started, unless another contraindication exists, in the presence of an open ulcer provided there are no signs of lymphangitis or periphlebitis. The decision when to start treatment requires experience and a few visits to some large teaching clinic are recommended. For obliterative injections sodium morrhuate and potassium oleate have proved satisfactory, their only drawback is the occasional development of hypersensitivity to the drug resulting in urticaria, edema and sometimes a serious anaphylactoid reaction.

ASYMPTOMATIC UNDULANT FEVER

To the Editor—In routine blood tests of the resident population a number of laboratory reports received indicate undulant fever in dilutions of from 1:100 to 1:1000. All these patients have varying stages of pulmonary tuberculosis but are symptomless so far as can be determined for undulant fever. Will you please advise me regarding the significance of the test in this connection whether the presence of these patients in a group would make it inadvisable to retain them and what treatment if any should be employed?

ROBERT M. DEMING M.D. Glencliff N.H.

ANSWER—Subclinical or asymptomatic infections frequently occur following ingestion of raw milk containing Brucella organisms or after direct contact with infected animals. C. V. Carpenter, Ruth Boak and O. D. Chapman (*J. Immunol.* 17:65 [July 1929]) have submitted convincing evidence that anti-abortus agglutinins develop only when there has been actual invasion of tissues by living Brucella organisms. There is no evidence that agglutinins are absorbed passively in the intestine from pasteurized milk containing killed organisms. Unless the history reveals evidence of symptoms compatible with a diagnosis of undulant fever it is quite likely that these patients belong in the asymptomatic or subclinical group. There is no evidence that the disease is contagious from man to man. Several investigators have reported the successful use of Brucella melitensis (abortus) vaccine therapy in the symptomatic form or the disease.

RECURRENT ERYSIPELAS OF LEG

To the Editor—A married woman aged 44 had an attack of erysipelas in her right leg eight years ago. Two or three years later she had a second attack. These attacks have gradually come closer and closer together until within the last year she has had seven attacks. A roentgenogram of the leg shows the bone perfectly normal. All her teeth have been roentgenographed, her tonsils are innocent the sinuses are clear pelvic examination is negative and I am unable to find any foci of infection. The urine is normal. Menstruation is regular but comes every twenty-four days. Have you any suggestions as to the prevention of future attacks? I have thought of making a culture from a blister should one ever develop with the idea of making a vaccine but so far in none of the attacks have blisters been present and I did not feel that a culture made from the skin itself would be reliable. Treatment of each attack has been by the use of epsom salt compresses and such symptomatic treatment as was indicated.

WINGATE M. JOHNSON M.D. Winston Salem N.C.

ANSWER—Recurrent erysipelas of the leg has most frequently as the nidus of infection an Epidermophyton infection about the toes, and in order to prevent recurrence it is necessary for the usual treatment to be applied for such infections. Vaccines are of little use, but immunization by means of erysipelas toxin has proved of value.

CHRONIC EDEMA OF ANKLES

To the Editor—About two years ago Miss D. who does considerable tap dancing noticed that after strenuous dancing her left ankle would swell with pitting edema. This would disappear after eight hours rest in bed. The patient now 18 is healthy has never had any serious illness and so far as I can see shows no evidence of organic disease. About a year ago she entered the clinic of a local orthopedic hospital for treatment and diagnosis. Entire physical including pelvic examination was negative as were roentgenograms of the left leg. After about eight months attendance at the clinic she became convinced that the line of treatment employed—heating and massage especially—was not productive of results and I was consulted. When first seen about two weeks ago the ankle was slightly swollen but not tender and the patient did not walk with any demonstrative limp. My suggestion to her was that perhaps as long as two years ago she had a thrombophlebitis of the deep vessels of the leg and the proper line of treatment was to get off the foot and stay off. This she agreed to do and I fixed up a wire tent with an electric bulb within to supply heat and I have kept this on at all times. She has been wearing woolen ski socks in conjunction with the external heat. One week ago while I was on a trip she reports that the ankle ballooned up and has not been free from swelling since. Today there is pitting edema over the dorsum of the foot but none above the ankle. This of course being after she has been off the foot for two weeks. My impression of this case is that it is an old thrombophlebitis of the deep vessels. If so is not two years a long time for her to have symptoms? How could this be treated except by rest in bed and external heat? Are there any other possibilities that suggest themselves to you? Any help you may give me will be very acceptable. Please omit name.

M.D. New Jersey

ANSWER—Unilateral pitting edema of the lower extremity that is relieved by horizontal or elevated position suggests deep venous obstruction. Should there be a cyanotic hue and the appearance of collaterals when the edema is not present, the diagnosis is more certain. The gradual painless onset however in the absence of any history of operation or infectious disease, may speak for lymphatic obstruction due to a chronic obliterative lymphangitis. Sometimes both venous and lymphatic factors are present. If the temperature, white count and sedimentation rate are normal the presence of active infection may be excluded. The principles of treatment are first to get rid of the edema and second to prevent the fluid from reforming, as long continued edema leads to a fibrosis and hypertrophy of connective tissue. Elevation of the limb to an angle of approximately 30 degrees over night helps to get rid of the fluid. Should some remain, from 4 to 6 Gm of ammonium chloride, followed on the third day by 1 cc of salyrgan, readily mobilizes the residual edema, provided it still pits and there are no irreversible changes in the tissues. To keep the fluid out of the limb so deprived of edema water is restricted to 1000 cc daily and no additional table salt is allowed. Five grams of potassium chloride may be prescribed and used instead of table salt. An elastic hose of the "Lastex" type is ordered from toes to the mid thigh or even to the groin should the swelling extend to that level. Exercise and walking are not prohibited as the contraction of muscles facilitates venous and lymphatic return, but standing in one position or even sitting in one position without elevating the limb tends to increase edema. The prognosis as to cosmetic results is quite guarded. If the obstruction is venous the circulation is apt to improve but with the diminution of the edema collateral veins may become visible. If the obstruction is lymphatic the edema may gradually increase in spite of all conservative treatment. In such cases radical surgical procedures that aim to drain lymphatic retention into nonaffected areas are justifiable.

OFFENSIVE DISCHARGE IN FEMALE

To the Editor—I have a patient aged 37 married who has one child aged 13 and has had two abortions since the birth of the child. Two years ago she had an ectopic pregnancy and operation revealed the left tube ruptured. The left ovary and tube were removed supravaginal hysterectomy was done on account of small fibroids in the fundus of the uterus and about 1 inch of the cervix was left it was cauterized because of some erosion. The health of the patient has been good since the operation but she has a disagreeable vaginal discharge which has a very offensive odor while examination shows the remaining portion of the cervix in apparently healthy condition as well as the vaginal membranes. Every kind of douche has been used. I think in an attempt to destroy the odor all with little or no results. The patient menstruates regularly on a twenty-eight day cycle with a small amount of flow for three or four days. There seems to be no definite time at which the discharge and odor are most aggravating. Treatments of the cervix with silver nitrate and antiseptics help a little as do daily douching with soda or copper sulfate. Will you please suggest further treatment and the possible cause of this odor? The patient has never had any venereal disease. If published please omit name. M D Indiana

ANSWER—A bacteriologic study of the discharge should be made, including examination of fresh material for trichomonads.

If infection with a specific organism is not evident, the persistent discharge is probably ascribable to a cervical pocket that does not drain. A search for pockets can be made in the office without causing the patient undue discomfort. The cervix is grasped with volsellum forceps and the finest Hegar dilator is used as a searcher within the cervical canal.

In the event that there is neither evidence of a specific infection nor pocketing interfering with drainage, vaginal removal of the cervical stump is the procedure of choice.

DETACHMENT OF RETINA

To the Editor—Will you please give me information regarding prognosis and treatment of detachment of retina. Kindly omit name. M D Alabama

ANSWER—Up to six years ago the visual prognosis in detachment of the retina was uniformly bad there being practically 100 per cent total loss of vision. But since the advent of surgical intervention as advocated by Gonnin the outlook has changed entirely. The prognosis for ultimate vision varies according to the length of time the detachment has existed, the cause of the detachment, and the portion of the retina affected. Under favorable conditions, vision has been restored in as high as 70 per cent of the cases. But considering all cases except those that from the outset look hopeless, the number of recoveries may be estimated conservatively at around 40 per cent.

Except in the detachments of pregnancy, the treatment is entirely surgical. The main methods are (1) the Gonnin method of thermocautery through a scleral puncture (now practically abandoned), (2) the Guist method of chemical cautery through a scleral puncture (now reserved for only certain unusual cases), (3) the Safar or Walker method of diathermy coagulation by individual platinum pins inserted into the sclera, (4) the Weve method of diathermy coagulation by repeated introductions through the sclera of a single needle, and (5) the Larsen (modified by Coppez) method of superficial coagulation of the sclera by diathermy. All the methods aim at the closure of the retinal hole that is supposed to exist in every case and at the production of inflammatory areas in the choroid to which the retina becomes adherent, thus holding it in place. In reality our knowledge of the modus operandi of the surgical treatment of retinal detachment is still in its infancy.

ASYMPTOMATIC NEUROSYPHILIS

To the Editor—Please advise me in the following case. A man aged 40 was infected with syphilis in 1930. In 1932 he had his first course of eleven treatments each of a bismuth compound and neosphenamine. In 1934 he had two more full courses of a bismuth compound and neosphenamine. The blood Wassermann reaction at that time was 3 plus. He has had one more full course the fourth this year of a bismuth compound and tryparsamide. The blood Wassermann reaction is now 2 plus. To my amazement a test of the cerebrospinal fluid revealed a Wassermann reaction 2 plus Kahn reaction 4 plus globulin 4 plus and colloidal gold and colloidal mastic both weakly positive. The patient is symptomatically free and apparently in perfect health. Should he have further treatments of tryparsamide or a course of fever treatments or should I be content with the occasional course of the bismuth compound? Please omit name. M D Ontario

ANSWER—This man appears to have an asymptomatic neurosyphilis. Several additional courses of tryparsamide with proper visual control alternating with a preparation of bismuth or mercury, should be given before administering fever therapy. If the spinal fluid continues positive, the latter procedure may be considered.

Council on Medical Education and Hospitals

INTERNSHIPS FOR GRADUATES OF FOREIGN MEDICAL SCHOOLS

Because many graduates of European universities and medical schools are applying for internships in this country, the Council on Medical Education and Hospitals at a recent meeting voted 'that when suitable graduates of class A schools of the United States and Canada are not available, hospitals approved for intern training may accept graduates of European schools who have passed parts I and II of the examinations of the National Board of Medical Examiners.'

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ARIZONA Phoenix April 7 Sec Dr J H Patterson 826 Security Bldg Phoenix
COLORADO Denver April 7 Sec Dr Harvey W Snyder 422 State Office Bldg Denver
CONNECTICUT Endorsement Hartford March 24 Sec Dr Thomas P Murdock 147 W Main St Meriden
HAWAII Honolulu April 13 16 Sec Dr James A Morgan 48 Alexander Young Bldg Honolulu
IDAHO Boise April 7 Commissioner of Law Enforcement Hon Emmitt Pfost 205 State House Boise
ILLINOIS Chicago April 7 9 Superintendent of Registration Department of Registration and Education Mr Homer J Byrd Springfield
IOWA Basic Science Des Moines April 14 Sec Prof Edward A Benbrook Iowa State College Ames
MINNESOTA Basic Science Minneapolis April 7 8 Sec Dr J Charnley McKinley 126 Millard Hall University of Minnesota Minneapolis Medical Minneapolis April 21 23 Sec Dr Julian F Du Bois 350 St Peter St St Paul
MONTANA Helena April 7 Sec Dr S A Cooney 7 W 6th Ave Helena
NEW MEXICO Santa Fe April 13 14 Sec Dr E LeGrand Ward Sina Plaza Santa Fe
RHODE ISLAND Providence April 23 Chief Division of Examiners Mr Robert D Wholey 366 State Office Bldg Providence
WISCONSIN Basic Science Madison April 4 Sec Prof Robert N Bauer 3414 W Wisconsin Ave Milwaukee

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II May 6 8 June 22 24 and Sept 14 16 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Oral examination for Group A and B applicants will be held in Kansas City Mo May 11 12 Sec Dr C Guy Lane 416 Marlboro St Boston

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada March 28 Oral clinical and pathological examination of all candidates will be held in Kansas City Mo May 11 12 Applications for the May examination must be received not later than April 1 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)

AMERICAN BOARD OF OPHTHALMOLOGY Kansas City Mo May 11 and New York Sept 26 All applications and case reports must be filed sixty days before date of examination Asst Sec Dr Thomas D Allen 122 S Michigan Ave Chicago

AMERICAN BOARD OF ORTHOPAEDIC SURGERY Kansas City Mo May 11 Applications should be filed with the secretary on or before April 1 Sec Dr Fremont A Chandler 180 N Michigan Ave Chicago

AMERICAN BOARD OF OTOLARYNGOLOGY Kansas City Mo May 9 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PEDIATRICS Kansas City Mo May 9 Sec Dr C A Aldrich 723 Elm St Winnetka Ill

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY St Louis Mo May 8 9 Sec Dr Walter Freeman 1028 Connecticut Ave Washington D C

AMERICAN BOARD OF RADIOLOGY Kansas City Mo May 8 10 Sec Dr P R Kirklm Mayo Clinic Rochester Minn

AMERICAN BOARD OF UROLOGY Kansas City Mo May 8 10 Sec Dr Gilbert J Thomas 1009 Nicollet Ave Minneapolis

North Carolina Endorsement Report

Dr B J Lawrence secretary North Carolina State Board of Medical Examiners reports 19 physicians licensed by endorsement after an oral examination, Dec 9 1935. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad of
College of Medical Evangelists		(1934) N B M F
Howard University College of Medicine		(1934) Tennessee
University of Georgia School of Medicine		(1931) Georgia

Northwestern University Medical School (1934) Kansas	(1932)	Oklahoma
Johns Hopkins University School of Medicine	(1906)	Virginia
Harvard University Medical School	(1911)	California
New York University University and Bellevue Hospital Medical College	(1913)	New York
Syracuse University College of Medicine	(1928)	New York
Duke University School of Medicine	(1913) 2	N. B. M. Ex.
McHarr Medical College	(1927)	Louisiana
Baylor University College of Medicine	(1910)	Texas
Vanderbilt University School of Medicine	(1912)	Tennessee
Medical College of Virginia	(1912)	Texas
University of Virginia Department of Medicine	(1931) (1932)	Virginia

Ohio December Examination

Dr H M Platter secretary Ohio State Medical Board reports the oral written and practical examination held at Columbus Dec 3-5 1935. The examination covered 10 subjects and included 80 questions. An average of 75 per cent was required to pass. Forty-seven candidates were examined 46 of whom passed and 1 failed. The following schools were represented:

School	PASSED	Year	Per Cent
George Washington University School of Medicine	(1935)	84.4	
Georgetown University School of Medicine	(1914)	82.5	82.7
Loyola University School of Medicine	(1935)	75.9	77 *
Rush Medical College	(1915)	75.8	84.4 *
University of Kansas School of Medicine	(1935)	79.9	
Harvard University Medical School	(1932)	85.8	
University of Minnesota Medical School	(1929)	82.4	
St. Louis University School of Medicine	(1915)	81.7	
Creighton University School of Medicine	(1915)	78.3	81.2
Cornell University Medical College	(1933)	80.6	
New York Homeopathic Med. Col. and Flower Hospital	(1935)	82.7	93.8
University of Rochester School of Medicine (1934)	76.8		
Ohio State University College of Medicine	(1915)	84.2	93.8
Western Reserve University School of Medicine	(1931)	79.1	
Hahnemann Medical College and Hosp. of Philadelphia	(1935)	79.8	
Jefferson Medical College of Philadelphia	(1935)	80.9	
University of Pennsylvania School of Medicine	(1935)	93.8	
Medical College of Virginia	(1915)	77.8	
Dalhousie University Faculty of Medicine	(1932)	86.6	
Queen's University Faculty of Medicine	(1933)	78	
Uval University Faculty of Medicine	(1935)	81.8	
Friedrich Wilhelms Universität Medizinische Fakultät Berlin	(1933)	84	85.2
Christian Albrechts Universität Medizinische Fakultät Kiel	(1923)	79.6	
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultása Budapest	(1915)	83.7	

School	FAILED	Year	Per Cent
Universität Köln Medizinische Fakultät	(1934)	72.2	

* This applicant has completed the medical course and will receive his M.D. degree on completion of internship. License has not been issued.
† License has not been issued.
‡ Verification of graduation in process.

Kentucky December Examination

Dr A T McCormack secretary, State Board of Health of Kentucky, reports the written examination held in Louisville Dec 3-5 1935. The examination covered 11 subjects and included 110 questions. An average of 70 per cent was required to pass. Nine candidates were examined all of whom passed. The following schools were represented:

School	PASSED	Year	Per Cent
Howard University College of Medicine	(1934)	82	
Northwestern University Medical School	(1935)	76	
University of Louisville School of Medicine	(1934)	84	84 *
Harvard University Medical School	(1930)	84	
University of Pennsylvania School of Medicine	(1935)	83	
University of Tennessee College of Medicine	(1935)	82	
Vanderbilt University School of Medicine	(1933)	90	

Twelve physicians were licensed by reciprocity and 2 physicians were licensed by endorsement from April 12 through December 18. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year	Reciprocity with
University of Illinois College of Medicine	(1931)	Missouri	
Indiana University School of Medicine	(1932)	Indiana	
University of Louisville School of Medicine	(1927)	Indiana	
(1934) West Virginia			
University of Cincinnati College of Medicine	(1933)		
(1934) (1935) Ohio			
University of Pittsburgh School of Medicine	(1933)	Penna.	
Woman's Medical College of Pennsylvania	(1922)	Penna.	
University of Tennessee College of Medicine	(1932) (1933)	Tennessee	
Vanderbilt University School of Medicine	(1934)	Virginia	

School	LICENSED BY ENDORSEMENT	Year	Endorsement of
Harvard University Medical School	(1933)	N. B. M. Ex.	
Jefferson Medical College of Philadelphia	(1933)	N. B. M. Ex.	

License has not been issued

Book Notices

Medical Uses of Radium. Summary of Reports from Research Centres for 1934. Medical Research Council Special Report Series No. 901. Paper Price 1s 1p 45 with 7 illustrations. London His Majesty's Stationery Office 1935.

This is the thirteenth report of the Medical Research Council describing the research done with radium and radon distributed by the Medical Research Council to selected centers in Great Britain and Ireland. The original stock of radium entrusted to the council by the British government and lent by the council to various centers is supplemented by further quantities provided by the British Empire Cancer Campaign and by the National Radium Commission. The research, which has been continued for several years at the Strangeways Laboratory, Cambridge tends to show that biologic effects produced by radiation can be repeated over and over again with a measure of accuracy not always attained in purely physical fields, provided the most rigorous attempt is made to limit the number of variables operating at one and the same time. They find that to get a well recognized effect there is an optimum intensity at which the release of energy may occur. It has long been known that tissues react differently according to the time intervals over which the physical doses are applied, according to the type of radiation and according to the dose that is given but this apparently new observation is one that must sooner or later be taken into account in clinical conditions.

Dr Mottram has investigated the problem of artificially varying the degree of radiosensitivity of tissues. He has determined that those agents which are active in one direction or the other in animal cells produce corresponding effects in vegetable cells.

Investigation in the Bland Sutton Institute of Pathology at the Middlesex Hospital shows that when a portion of tissue is removed by the method of electrocoagulation good sections can be prepared from it for microscopic studies and there is the clinical assurance against dissemination.

Dr W V Mayneord of the Cancer Hospital reports further experimental work on the applicability of the roentgen to gamma ray therapy. The value previously found (of approximately 83 roentgens per milligram hour 1 cm from a point source filtered with 0.5 mm of platinum) has been confirmed by Dr Mayneord as well as by certain other observers. Further investigation on the design of air-wall ionization chambers for such measurements has been performed.

Crabtree and Cramer have shown, using animal tumors and the tissues of rats that the radiosensitivity of cells is greatly altered by treatments known to be specially effective in having an action on cellular respiration. Their results suggest that radiation may have a special action on the respiratory system which appears to be especially sensitive in its nonfunctioning oxidized phase. The results of the investigations by these authors suggest that the varying sensitivity of tumors to radiation is probably not related to mitotic activity but rather to the metabolic and perhaps the respiratory activity of the cells.

The report includes references to the treatment of mammary cancer in various institutions. The Aberdeen Royal Infirmary reports microscopic examination of thirteen breasts removed following radium treatment. In the Birmingham General Hospital the standard method of treatment of mammary cancer has been complete interstitial irradiation as outlined by Keynes. Two or three months later, external radiation is applied. In the Marie Curie Hospital the operable lesions have been treated by radical operation and radium has been restricted to the inoperable group. In the Middlesex Hospital radical operation is performed for operable lesions by some surgeons and radium tubes are inserted as a prophylactic measure in the intercostal spaces. Some lesions are treated by interstitial radiation. An increasing number of patients are receiving preoperative roentgen treatment. In the Royal Free Hospital early lesions are treated by radical surgery in some cases combined with radium therapy. Mr Geoffrey Keynes of St Bartholomew's Hospital reports that during the last three years the procedure in the treatment of cancer of the breast has been varied by performing excision of the tumor with diathermy when it is small or

a local removal of the breast when the growth is larger. The routine treatment with radium is then carried out from two to three weeks later. It is believed that the local excision reduces the incidence of local recurrence in the breast. The Surgical Unit of the St Bartholomew's Hospital after studying the comparative results of treatment of cancer of the breast by surgical operation and by interstitial radiation, concludes that the five year survival rate of the two methods of treatment is not materially different, being in each case 40 per cent. It became evident that, if improvement was to be reached, a new line of approach should be tried. Consequently it was decided that the next attempt should be to combine interstitial radium with surgery. It is intended to study a series of fifty cases treated by this method before reaching any conclusion.

Nine hundred and sixty cases of carcinoma of the cervix have been treated in the Marie Curie Hospital during the first ten years of its existence. Recently there has been a moderate increase in the number of patients applying for treatment at an early stage. The Coutard technic of roentgen therapy is utilized and except in very advanced cases is combined with radium. Ninety-three cases of carcinoma of the corpus uteri have been treated by radium in the Marie Curie Hospital, representing only 40 per cent of the total group. When possible, hysterectomy has been performed. Eight hundred and thirty-three cases of nonmalignant uterine hemorrhage have been treated at the Marie Curie Hospital. Eighty-seven cases of myoma of the uterus were treated with radium. In four cases, hysterectomy was subsequently performed.

In August 1932 the King Edward's Hospital fund for London, acting with the Radium Commission put at the service of three London hospitals—the Cancer Hospital, University College Hospital and Middlesex Hospital—1 Gm radium units, that their utility in the treatment of malignant disease might be investigated. The report from the Middlesex Hospital states that the telerradium unit has continued to prove its usefulness to the radium department and has been in use both day and night. One hundred and nineteen patients have been treated by this means during the year. The report states that it is a method of therapy which is more convenient and associated with less danger to the staff than is the case when large molded applicators are used. From the University College Hospital it appears that during the first two years of its use 109 patients were treated with the 1 Gm unit. The best results have been obtained with lesions that are not too deeply seated and when so located as to permit crossfiring from various directions. The solution of this difficulty obviously lies in the direction of treating at a greater distance, which in turn requires a larger quantity of radium.

Body Water. The Exchange of Fluids in Man. By John P. Peters, M.D. Professor of Internal Medicine, Yale University School of Medicine. Cloth. Price \$4. Pp 405 with 5 illustrations. Springfield, Illinois and Baltimore: Charles C. Thomas, 1935.

From time to time it is of value to review important investigations and relevant studies to see how coherent they are in relation to an accepted hypothesis, to find where they disagree and to devise new experimental approaches for the solution of the problem. The author of this monograph is well qualified to examine such an important subject in this manner. The book, however, is more than a review of the movement of fluid and electrolytes and the nature of restraints the vital membranes of the body impose on them. It is a judicious and scholarly attempt to construct a background for a more rational analysis of the functional pathology of various clinical and pathologic disturbances. The disturbances related to renal injury receive major consideration. The author develops his thesis from fundamental discussions of chemical forces that control exchanges of fluid and solutes, the nature and movements of interstitial fluid and lymph, exchanges between blood and interstitial fluids, blood cells and serum cells and fluids and alimentary exchanges. He then considers the dynamic physiology of the kidney and the general nature of renal activity as a basis for interpretation of the phenomena seen in renal disease. The desirability of distinguishing between changes secondary to renal damage and those resulting from such involvement are clearly indicated. While the book is not intended as an unprejudiced review of the subject, it is presented in such a scholarly and convincing manner that it

unconsciously serves that purpose. More than 800 critically selected references are correlated and cited. The book is highly recommended as an important contribution to the subject and one which clinicians can profitably read with the physiologist and the biochemist.

Haarkrankheiten und kosmetische Hautleiden mit besonderer Berücksichtigung der Therapie. Von Prof. Dr. R. O. Stein, Vorstand der Abteilung für Haut und Geschlechtskrankheiten am Mariahilfer Ambulatorium und Spital in Wien. Paper. Price 12.60 marks. Pp 218 with 6 illustrations. Vienna: Julius Springer, 1935.

Stein has presented in a readable style the subject of diseases of the hair and cosmetic ailments of the skin. The work is divided into two parts. Part A deals with diseases of the hair, which are discussed under the topics of the hair covering of man, excessive hair growth, defects in hair covering and the hair shaft, mechanical disturbances of the hair shaft, the saprophytes that involve the hair shaft, and hair loss. The latter is divided into two separate topics: conditions that affect the mature hair and conditions affecting the hair papillae. Part B deals with the cosmetic diseases of the skin, which are discussed under the headings of nevi, tumors, scars and keloids, hyperpigmentation and depigmentation, anomalies in secretion of the sebaceous glands, anomalies in secretion of the sweat glands, angioneurosis, hyperkeratosis, and senile changes and correction of wrinkling of the face. The book treats the subject in a scientific manner, with free citations of the names of workers who have contributed pertinent articles bearing on the subjects discussed. Etiology, pathogenesis and various methods of treatment that can be employed are discussed. While some of the therapeutic agents are of a type not available in this country, the majority of the preparations recommended can be compounded here. The methods of treatment on the whole are conservative and conform in the main with the accepted methods used and recommended by American dermatologists. Stein gives a detailed discussion of the method of employment of a filtered technic for the roentgen treatment of hypertrichosis. Most American dermatologists do not feel that epilation by x-rays for hypertrichosis has a place in treatment because of the dangerous sequelae resulting from its use. The book should serve as a useful addition in the library of medical men interested in this phase of diseases of the skin and its appendages.

Practical Orthodontia. By Martin Dewey, DDS, M.D., F.A.C.D. Revised by George M. Anderson, DDS, Professor of Orthodontia, Baltimore College of Dental Surgery, Dental School, University of Maryland and others. Fifth edition. Cloth. Price \$8.50. Pp 514 with 586 illustrations. St. Louis: C. V. Mosby Company, 1935.

This is a new edition of the orthodontic textbook of the late Martin Dewey, arranged by George M. Anderson. Important additions have been furnished by the chapters written by the ten contributors. Dr. Anderson has attained the purpose set forth in the preface: 'To include in one volume authoritative material which will aid the student of dentistry, the practitioner of dentistry, and the student of orthodontia to understand the problems which confront those who choose to practice orthodontics.' Both students and practitioners of dentistry as well as specialists in the field of orthodontics will find much of value. Any author of such a work is confronted with no inconsiderable problem. The many contributions that have been made in this specialty, particularly in the last twenty years, preclude the possibility of more than a statement of principle in one volume. While a statement of principle is of material value and importance to the student of dentistry, the requirement of the practitioner in this specialty demands a comprehensive treatment of both fundamental principles and the details of technique. From this standpoint the volume occupies an intermediate position. A simple presentation of principles such as is admirably accomplished in the chapter by Rudolf Kronfeld, on tissue changes incident to orthodontic tooth movement, would permit a material reduction in the size of the volume, while a comprehensive treatment of the subject matter would necessitate extensive expansion.

Dr. Bernhard Weinberger has contributed an excellent chapter on the historical background of modern orthodontia. Chapter 5 on the etiology of malocclusion, reveals by its attention to detail and its avoidance of principle a serious void in the knowledge of orthodontia. It is probable that time will have to contribute through careful and intelligent investigation more satisfactory

data before it will be possible to rationalize the principles that underlie the production of malocclusion. As these principles become clearer the detailed recitation of particular active causes will assume a more rational position. There is an extensive treatment of diagnosis including the specialized techniques that have recently come into prominence. Of particular note in this connection are gnathostatics and photostatics in chapter 8, radiographic profiles by Sidney Riesner in chapter 7 and measurement of dental-facial changes in relation to the cranium by B. Holth Broadbent in chapter 9.

Attention is appropriately given to an important phase of orthodontic science included in the prevention and correction of malocclusion by other than mechanical means. In this respect the chapter on myofunctional treatment of malocclusion, by Alfred Paul Rogers is of importance. A detailed exposition of hand technique is included in the contribution of Earl W. Swinehart on orthodontic bands. Mechanical appliances in most common use are presented in chapters 17, 18, 19 and 20.

The matter of retention is given a short chapter which is satisfactory from the standpoint neither of principle nor of detail of practice. The final two chapters deal with correlation between orthodontics and two closely allied specialties, oral surgery and that of the nose and throat. The former written by Edward A. Kitlowski furnishes a discussion of the principal deformities interesting to both specialties. The latter is a brief recognition of the close relationship that exists between the oral and the nasal cavity and the nasal sinuses.

A Basis for the Theory of Medicine. By A. D. Speransky, Director of the Department of Pathophysiology of the All Union Institute of Experimental Medicine. Translated and edited by C. P. Dutt, B.A. With the collaboration of A. A. Subkov, Senior Research Worker of the Timmizhev Biological Institute. Cloth, Pp. 462 with 69 illustrations. Moscow: Intra Co Operative Publishing Society, 1935.

This monograph with a rather ambitious title will impress the reader with the way in which the Pavlov school has dominated soviet medical science. The text deals almost exclusively with neurophysiology and at times a philosophic attempt to explain diverse pathologic and clinical observations on that basis. The book lacks clarity and organization and much interesting information is submerged as a result of it. The author discusses the nervous mechanism of complex convulsive states, the role of the cerebrospinal fluid in the genesis of some forms of encephalitis, its circulation, the role of the nervous system in the pathogenesis of certain infectious diseases and dystrophic processes within the nervous system. Original experiments are cited throughout the text. While many thoughts expressed in the book are provocative it lacks unity. The main criticism of this monograph is its unjustified generalizations. The author has strayed too far from his material. He has presented a great deal of theory with meager basis for it. Before pulling down the old edifice, one must have more than architectural aspirations for the new one.

Practical Clinical Psychiatry for Students and Practitioners. By Edward A. Streeter, A.M., Sc.D., M.D., Professor of Psychiatry and Chairman of the Department of Psychiatry, School of Medicine, University of Pennsylvania, and Franklin G. Fbaugh, A.B., M.D., Professor of Psychiatry, University of Colorado Medical School. Fourth edition. Fabrikoid. Price \$5. Pp. 765 with 69 illustrations. Philadelphia: I. Blakiston's Son & Co. Inc., 1935.

The new edition, the fourth in ten years of this popular textbook is dedicated to Dr. Adolf Meyer. His psychobiologic point of view and teachings richly pervade the whole book. There are 125 more pages than in the previous edition. Rearrangement of certain material and rewriting of other parts have resulted in distinct improvement. There is a new first chapter on psychobiologic conceptions of mental disorders. The autobiographic or planned personality study of himself by the student is favored for his better subsequent understanding of psychiatric patients. The new American classification of mental diseases in about fifty groups is included for reference, although the author's original list of seven fundamental types is retained. Methods of examination have been amplified. A discussion of the Kettering hyperthermia is added to the section on therapy of neurosyphilis. There are many new illustrations. The new final chapter is by Dr. Leo Kanner on psychopathologic problems of childhood. As an introduction to modern psychiatry, this volume is the superlative of good.

Handbuch der experimentellen Pharmakologie. Herausgegeben von A. Heister. Fortgeführt von W. Heubner, Professor der Pharmakologie an der Universität Berlin. Band III, Teil 4. Seltene Erdmetalle: Molybden und Wolfram. Wismut. Bearbeitet von B. Behrens u. a. Paper. Price 48 marks. Pp. 2189-2730 with 14 illustrations. Berlin: Julius Springer, 1935.

This volume of the Handbook on Experimental Pharmacology is devoted most especially to an exhaustive exposition of the pharmacology of bismuth (over 500 pages), a discussion of what is known about molybdenum and tungsten, and a chapter on the rarer earth metals. In pharmacologic action the latter resemble one another and aluminum as well and to a certain extent thorium. Especially marked is the resemblance between neodymium and praseodymium while there are, on the other hand, rather marked differences in case of yttrium, lanthanum and scandium. It has been shown that cerium cannot replace calcium or magnesium. The use of cerium oxalate as an antiemetic seems to have a certain amount of experimental justification. Colloidal molybdenum seems to have chemotherapeutic possibilities in various infections including tuberculosis. In the section on bismuth August W. Forst discusses interestingly the history of the therapeutic use of bismuth compounds and points out that "magisterium bismuthi" (bismuth subnitrate) after several ups and downs in therapeutic favor has been deleted as superfluous, from the British pharmacopoeia of 1933. In view of the fact that bismuth has been tried for almost everything, it is not strange that it was recommended as early as 1788 by Bassiano Carminati as a remedy for syphilis, a use around which the chief interest in bismuth centers today. While bismuth salts themselves have no spirocheticidal action in vitro such power is developed by incubation with fresh tissue extract. This effect is found to reside in a thermolabile, nondialyzable bismuth protein combination for which the term "bismoxyl" has been proposed and it is believed that in this form bismuth circulates and exerts its therapeutic action. For the tissue extract 'principle' responsible for the production of bismoxyl the term "bismogen" has been suggested. In the affected tissues bismoxyl is present in such minute traces that it must act as a catalyzing influence in accelerating the natural parasitolytic defensive principles. In contrast to the arsenicals bismuth action on the syphilis spirochetes is exceedingly slow in asserting itself but protection derived from it is much more durable. Future improvements in syphilis therapy with bismuth may depend on the development of compounds with the highest possible bismuth content and lowest possible toxicity.

Modern Treatment in General Practice. Volume II. Edited by Cecil P. C. Wakeley, D.Sc., F.R.C.S., F.R.S.E., Fellow of King's College, London. Cloth. Price \$4. Pp. 382 with illustrations. Baltimore: William Wood and Company, 1935.

This is a collection of reprints of articles that appeared weekly in the *Medical Press and Circular*, the subjects ranging in a more or less haphazard manner from the therapy of peptic ulcer, constipation, asthma and thyrotoxicosis to the treatment of facial injuries, athletic injuries, and several varieties of fractures. Each article is prepared by an eminent specialist, student of the subject, with illustrations wherever they may be of advantage. One senses the voice of experience emanating from the pages of this book, which can be unreservedly recommended most especially to the general practitioner.

Agents of Disease and Host Resistance Including the Principles of Immunology, Bacteriology, Mycology, Protozoology, Parasitology and Virus Diseases. By Frederick P. Gay. In association with nineteen others. Cloth. Price \$10. Pp. 1581 with illustrations. Springfield, Illinois: and Baltimore: Charles C. Thomas, 1935.

This is a comprehensive treatise on the agents of disease and resistance of the host. It embraces the principles of bacteriology, mycology, protozoology, parasitology and virus diseases. It is monographic in scope and completeness, yet in its uniformity and point of view it is much like a comprehensive textbook. This has been achieved by careful editing and organization of material from experienced collaborators who for the most part have been associated with the author in the same department. The text deals essentially with the principles of the respective subjects and purposely omits technical methods. While this type of organization will distinctly limit its immediate usefulness for the laboratory technician it will more than compensate for the fundamental knowledge it will impart. The book will probably find its greatest use as a reference work.

but is a valuable addition to any physician's library. It is adequately illustrated and notably free from errors. Each subject is supplemented by a critically selected and unusually complete bibliography. The book is highly recommended as an important contribution to any medical library.

Die Praxis der Sterilisierungsoperationen Von Prof. Dr. med. K. H. Bauer, Direktor der chirurg. Universitäts-Klinik Breslau und Prof. Dr. med. I. von Mikulicz-Radecki, Direktor der Univers. Frauenklinik Königsberg. 1 Fr. Paper. Price 15.40 marks. Pp. 176 with 91 illustrations. Leipzig: Johann Ambrosius Barth, 1936.

The Nazi government in Germany has caused medical men to review rather carefully the so-called medical indications for the operation of sterilization. The first section of the monograph by Bauer and Mikulicz-Radecki is a discussion of the indications for this operation which is now required in Germany. It also gives the legal forms that are used in cases in which sterilization is employed. The second section of the book describes the various operations that may be used for the sterilization of men. The third section deals with the types of operations suitable for the sterilization of women. The operative procedures are shown in the illustrations. Eight pages of bibliography and the index complete the volume. Those who are interested in the study of medical sterilization will find this an interesting contribution to the subject.

The Spleen and Resistance By David Peila, M.D., Associate Pathologist and Bacteriologist, Montefiore Hospital, and Jessie Marmorston, M.D., Associate in Pathology, Cornell University Medical College. With a foreword by David Marine, M.D. Cloth. Price \$2. Pp. 170. Baltimore: Williams & Wilkins Company, 1935.

One of the factors that determine the infectibility as well as the sequelae of infections in the human body has been constantly associated with the spleen and the reticulo-endothelial system. A fair amount of medical literature has been devoted to this interesting but elusive subject. The authors of this monograph have not only critically evaluated that literature but cite their own contributions in detail which definitely add to our knowledge. Human as well as animal material has been utilized for study. The introductory chapter on anatomic considerations of the spleen is concise but adequate. Then follows a detailed consideration of the pathologic changes in the spleen in various types of infections of bacterial, virus, parasite and fungus origin. The functions of the spleen as an organ of macrophage tissue and antibody formation are next discussed and this material is correlated with changes after splenectomy. Each phase of the subject and pertinent literature are well summarized and judiciously interpreted. This concise but comprehensive presentation should be of interest to the clinician as well as to the pathologist and the bacteriologist.

Clinical and Pathological Applications of Spectrum Analysis with Notes on Spectrography in Chemistry and Mineralogy and Tables for Qualitative Analysis By Dr. Walther Gerlach and Dr. Werner Gerlach. Being the authorized translation of Part II of *Die chemische Emissionsspektalanalyse*. Translated by Joyce Hilger. Paper. Cloth. Price 15s. Pp. 143 with 50 illustrations. London: Adam Hilger Ltd., 1934.

This volume is the authorized translation of part II of *Die chemische Emissionsspektalanalyse* by Dr. Walther Gerlach and Dr. Werner Gerlach. Adam Hilger Limited, the spectrograph manufacturer, of London, is the publisher and distributor of this translation. If one has spectrographic equipment, expensive though it may be, much of interest and of value may be accomplished in the various fields of study, among which may be listed toxicology of various kinds. Special methods are given for the qualitative and quantitative analysis of organs, secretions and excretions. The use of the spectrograph as applied to electropathology and pneumoconiosis is also described. Other subjects of a general nature are treated. If one does not have spectrographic equipment the book is without practical value.

Manuel de coprologie clinique Par R. Giffon. Preface de J. Ch. Lhuys. Third edition. Paper. Price 28 francs. Pp. 274 with 45 illustrations. Paris: Masson & Cie, 1935.

This small manual well deserves its third edition. It is concise and well written. The subject is thoroughly covered and brought down to date. The chapter dealing with the physiology of the gastrointestinal tract is especially to be commended. All phases of the subject are given in detail including the chemical, bacteriologic and allergic. The parasitology is exceptionally well given, with numerous well-chosen illustrations.

Popoff's Quantitative Analysis: The Theory and Practice of Modern Analytical Chemistry with Problems and Explanations of Calculations Revised by Murray J. Rice, Ph.D., Professor of Chemistry, New York State College of Ceramics at Alfred University, and Warren P. Cortelyou, B.S., Assistant Professor of Chemistry, New York State College of Ceramics at Alfred University. Third edition. Cloth. Price \$4. Pp. 555 with 76 illustrations. Philadelphia: P. Blaisdell's Son & Co., Inc., 1935.

This volume is intended to be used as a textbook and laboratory manual in beginning inorganic quantitative analysis. For this purpose it should prove useful. The treatment of theoretical subjects is good. Micromethods and methods of analysis for organic substances are not included.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Scarlet Fever Not a Compensable Injury—The plaintiff, an employee in the cafeteria operated by the defendant hospital, contracted scarlet fever allegedly from a student nurse with whom she came in contact in the course of her employment. In a proceeding under the workmen's compensation act of Michigan, the department of labor and industry awarded compensation to the plaintiff and the defendants appealed to the Supreme Court of Michigan.

Although the plaintiff might possibly have contracted the disease outside the hospital, the court said, the evidence constituted some basis for the finding that the plaintiff contracted the disease in the hospital in the course of her employment. But continued the court, the purpose of the workmen's compensation act is to give compensation for industrial accidents. It protects employees against all accidental injuries arising out of and in the course of employment, whether caused by the negligence of the employer or not, but not against a contagious disease contracted from a fellow employee. The court expressed itself as impressed with the reasoning of Judge Cardozo in *Connelly v. Hunt Furniture Co.*, 240 N. Y. 83, 147 N. E. 366, as follows:

Germes may indeed be inhaled through the nose or mouth or absorbed into the system through normal channels of entry. In such cases their inroads will seldom, if ever, be assignable to a determinate or single act identified in space or time. [Citations omitted.] For this as well as for the reason that the absorption is incidental to a bodily process both natural and normal, their action presents itself to the mind as a disease and not an accident. Our mental attitude is different when the channel of infection is abnormal or traumatic—a lesion or a cut. If these become dangerous or deadly by contact with infected matter, we think and speak of what has happened as something catastrophic or extraordinary—a mishap or an accident, though very likely a disease also.

In the opinion of the court in the present case, the contraction of a contagious disease under the circumstances here presented did not constitute an industrial accident and did not come within the purview of the workmen's compensation act. The award was consequently set aside.—*Basil v. Butterworth Hospital (Mich.)*, 262 N. Y. 281.

Roentgenograms: Ownership of Roentgenograms—The defendant company employed the plaintiff, a physician, to treat one of its employees who had sustained an injury to the lower part of the back involving the sacroiliac joint. On the refusal of the company to pay for the services rendered, the plaintiff brought suit. A judgment was rendered in favor of the plaintiff and the defendant appealed to the Supreme Court of Michigan.

The defendant declined to pay the bill because the plaintiff refused to deliver to it certain roentgenograms taken during the course of treatment. The plaintiff was justified in thus refusing to surrender possession of the roentgenograms, said the Supreme Court. In the absence of agreement to the contrary, roentgenograms are the property of the physician who has made them incident to treating a patient, notwithstanding their cost is charged to the patient. Their retention by the physician constitutes an important part of his clinical record.

in the particular case, and in the aggregate roentgenograms may embody and preserve much of value incident to a physician's experience. They are as much a part of the history of the case as any other case record made by a physician. Roentgenograms differ little if at all from microscopic slides of tissue made in the course of diagnosing or treating a patient, and it would hardly be claimed that such slides were the property of the patient. Furthermore, continued the court in the event of a malpractice suit against the physician the roentgenograms that he has caused to be taken and preserved incident to treating the patient might often constitute the unimpeachable evidence which would fully justify the treatment of which the patient complained. In reaching its conclusion the court relied on the cases of *Colless v E W Haller Co* (C C) 64 F 280 31 L R A 283, and *Pollard v Photographic Company*, 40 Ch Div 345, in which it was held that the negative of an ordinary photograph, in the absence of an agreement otherwise, belongs to the operating photographer although his use thereof may be restricted.

The judgment in favor of the physician was affirmed—*McGarry v J A Meier Co (Mich)*, 262 N W 296

Workmen's Compensation Acts Physician's Right to Initiate Proceedings Before Industrial Accident Board

—A workman injured in the course of his employment was treated in a hospital by the physician-plaintiff, on the written authorization of the workman's employer. The employer's insurance carrier paid the hospital bill, \$315. Later the workman was treated in another hospital by another physician, and for the services of both hospital and physician the insurance carrier paid \$185. The workman settled his claim against his employer for compensation, with the approval of the Montana industrial accident board. Thereafter, the physician who treated the workman immediately after the injury sent to the insurer a bill for services rendered. The insurer refused to pay and the physician initiated proceedings before the Montana industrial accident board to compel him to do so. The board dismissed the proceedings, and its action was affirmed by the district court, Glacier County. The physician thereupon appealed to the Supreme Court of Montana. The insurer contended (1) that, as the Montana workmen's compensation act limited an employer's liability for medical and hospital services to \$500, it had already discharged its obligation since it had paid that amount and (2) that the industrial accident board was without jurisdiction to hear the proceedings instituted by the physician.

The Supreme Court pointed out that this was not a proceeding before the industrial accident board by the injured workman, seeking an award on account of medical or hospital services. If it were said the court, the board would undoubtedly have jurisdiction. Here, however, the claimant is a physician who has rendered services to the injured workman, and neither the workman nor his employer is a party to the proceedings. The Montana workmen's compensation act does not specifically authorize the board to fix the fee charged by any person for any service in connection with the act as do some other state compensation acts but it authorizes the board only to determine disputes or controversies arising under the act. Even under statutes that authorize industrial accident boards to fix medical fees, said the court it is generally held that a physician may maintain an action at law to recover for services rendered an injured workman and that the courts have jurisdiction. Under such statutes it is generally held, too that an industrial accident board or any similar agency is without jurisdiction to make an award to a physician who has rendered medical services at the request of an employer or insurance carrier. In the judgment of the Supreme Court the Montana industrial accident board in approving the settlement between the employer and his injured workman, had exhausted its jurisdiction before the present proceedings were initiated. The board therefore was without authority to entertain the physician's claim. The physician's remedy in this case, if he had any, the Supreme Court concluded was an appropriate action in court. In view of this fact the Supreme Court found it unnecessary to pass on the contention of the insurer that it had satisfied the liability of the employer and itself when it paid for medical and hospital services without reference to the present claim, the sum of \$500 the statutory limit.

The judgment of the court below, affirming the action of the industrial accident board dismissing the proceeding instituted by the physician, was affirmed—*Leist v United States Fidelity & Guaranty Co (Mont)*, 48 P (2d) 772

Society Proceedings

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- Alabama Medical Association of the State of Montgomery Apr 21 '32 Dr D L Cannon 519 Dexter Avenue Montgomery Secretary
- American Academy of Pediatrics Kansas City Mo May 11 '32 Dr Clifford G Grulee 636 Church St Evanston Ill Secretary
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Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American J Obstetrics and Gynecology, St Louis

31 1186 (Jan.) 1936 Partial Index

- Chronic Hypochromic Anemia in Women. Consideration of Its Etiology and Treatment with Especial Reference to Relationship of Gynecologic Disorders. I. A. Cray and M. M. Wintrobe. Baltimore—p. 3.
- Study of Ovaries Following Preoperative Administration of Extract of Pregnancy Urine. E. C. Hamblen and R. A. Ross, Durham N. C.—p. 14.
- *Influence of Collapse Therapy in Treatment of Pulmonary Tuberculosis on Menstrual Physiology. E. M. Jameson. Saranac Lake N. Y.—p. 30.
- *Vaccination During Pregnancy as Prophylaxis Against Puerperal Infections. Preliminary Report. J. B. Bernstein and R. E. Otten. Philadelphia—p. 37.
- Single Contraction Delivery in Breech Presentation. E. T. Rutison, Sacramento Calif.—p. 49.
- *Water Concentration of Blood During Pregnancy. Labor and Puerperium. F. W. Oberst and E. D. Plass. Iowa City—p. 61.
- Pneumococcus Pelvic Infection in Women. P. Tompkins. Philadelphia—p. 70.
- Study of Blood Loss in Third Stage of Labor and Factors Involved. J. B. Pastore. New York—p. 78.
- Treatment of Pelvic Inflammation by Iontophoresis of Acetyl Beta Methylcholine Chloride. A. Jacoby. New York—p. 93.
- Resume of Two Hundred and Twenty-Three Cases of Surgical Sterilization. C. B. Lull. Philadelphia—p. 101.
- Month of Conception of Nine Hundred and Thirty-Five Congenitally Malformed Individuals. D. P. Murphy. Philadelphia—p. 106.
- Is the Oval or Female Type Pelvis a Rachitic Manifestation? H. Thoms. New Haven Conn.—p. 111.
- Irradiation of Pituitary Gland in Treatment of Menopausal Symptoms. C. G. Collins, E. P. Thomas and L. J. Menville. New Orleans—p. 115.
- Effect of Sympathetic Denervation on Ovulation and Estrus in Rat. H. G. Schwartz and C. L. Buxton. Boston—p. 132.
- Personal Record of Hysterectomies Performed During Period of Five Years. H. Grad. New York—p. 150.
- Kirschner-Wagner Operation for Construction of Artificial Vagina. D. A. Barrows. New York—p. 156.

Collapse Therapy for Tuberculosis and the Menstrual Physiology—Jameson says that a study of seventy-four cases of tuberculosis has shown that thoracoplasty results in definite changes in the menstrual function. The untoward results noted cannot always be attributed to an increase in the tuberculous lesion or to a further deterioration in the patient's health. It would seem that the usual explanation of a "toxemia of tuberculosis as the cause of abnormal menstruation in tuberculous women is inadequate and that the problem should be approached from the same angle and with the same broad point of view that obtains in the investigation of endocrine dystrophies in nontuberculous women.

Prophylaxis Against Puerperal Infections—Bernstein and Otten undertook to culture the organisms commonly found in puerperal infection, test their effect on laboratory animals and by means of a vaccine made from the cultures endeavor to elevate the immunity of the pregnant woman to puerperal infection in general. The technique of preparing the vaccine, the experimental trials in mice and the results obtained by the use of the vaccine in fifty-one pregnant women are discussed. Active immunity was conferred to mice by means of repeated injections of vaccine. The safety and absence of reactions to the vaccine were first demonstrated in a series of nonpregnant women of the childbearing period. From three to thirteen injections of the vaccine were given the fifty-one pregnant women without untoward reactions. Each patient was first given an intracutaneous injection of 0.05 cc of vaccine on the flexor surface of the forearm. Subsequent injections at weekly intervals were given intramuscularly in the deltoid region. The initial intramuscular injection was 0.1 cc. The dosage was gradually increased to 0.2 cc per injection. Abortion or mis-

carriage did not occur. Preexisting conditions in these cases, whether acute or chronic were not aggravated by vaccination. These fifty-one patients delivered with no fatalities. The puerperal morbidity was 59 per cent as compared to the combined morbidity of the nonvaccinated cases which was 19.01 per cent. There was one stillbirth, the mother being a preeclamptic patient with marked hypertension and a separated placenta. The authors feel that this type of vaccination of pregnant women should be included in the armamentarium of antepartum care.

Water Concentration of Blood During Pregnancy—Oberst and Plass studied the moisture content of plasma and cells in relation to variations in the plasma proteins and the cell hemoglobin in twenty pregnant women (ten primigravidas and ten multigravidas), ten parturient women, ten puerperal women and ten nonpregnant women who served as controls. The pregnant women were in the latter part of the third trimester of pregnancy. The obstetric patients were clinically free from disturbing disease conditions, while the nonpregnant group consisted of nurses and of patients with minor complaints who were in the gynecologic wards. All individuals were given an ordinary mixed diet and, except for the parturient and puerperal patients, were not confined to bed. The study disclosed that during the active childbearing function of women, the water concentrations of whole blood, plasma and cells follow the same general curve, which is the reverse of that noted for specific gravity of whole blood and plasma, cell volume, plasma proteins and hemoglobin content of whole blood. These observations confirm the conception of a blood dilution during pregnancy with prompt elimination of the excess water during parturition and the puerperium. There is evidence that the body attempts to compensate for this dilution by increasing the hemoglobin content of individual cells, which consequently show an increased specific gravity. The slight anemia of normally pregnant women recognized by clinical methods is only apparent and can be explained by physiologic dilution of the blood associated with an increased blood volume, and by the further dilution of finger-prick blood with the fluid from edematous subcutaneous tissues.

American Journal of Pathology, Boston

12 1140 (Jan.) 1936

- *Pathologic Changes in Bone Marrow in Agranulocytosis. R. C. Darling, F. Parker Jr. and H. Jackson Jr. Boston—p. 1.
- Spectrographic Study of Leprous Lesions. E. V. Cowdry, L. F. Heimbarger and P. S. Williams. St. Louis—p. 13.
- *Lesions in Auriculoventricular Conduction System Occurring in Rheumatic Fever. L. Gross and B. M. Fried. New York—p. 31.
- Benign and Malignant Hypertension and Nephrosclerosis. Clinical and Pathologic Study. P. Kimmelstiel and C. Wilson. Boston—p. 45.
- Intercapillary Lesions in Glomeruli of Kidney. P. Kimmelstiel and C. Wilson. Boston—p. 83.
- Inflammatory Lesions in Glomeruli in Pyelonephritis in Relation to Hypertension and Renal Insufficiency. P. Kimmelstiel and C. Wilson, Boston—p. 99.
- Study of Adrenal Cortex Morphology. R. L. Zwemer. New York—p. 107.
- Chemical Analysis of Atherosclerotic Lesions in Human Aorta. Pearl M. Zeek. Cincinnati—p. 115.
- Treponema Pallidum in Syphilitic Aortic Valvulitis of a Congenitally Bicuspid Valve with Subaortic Stenosis. Report of Case. A. B. Richter. Cleveland—p. 129.

Changes in Bone Marrow in Agranulocytosis—From an analysis of their twenty-five typical cases of agranulocytosis of which they had adequate and properly prepared sections of bone marrow, it appears to Darling and his associates as Fitz-Hugh and Krumbhaar first suggested that in the rapidly fatal cases the bone marrow shows stem cell hyperplasia and myeloid anamnesis (maturation arrest) without notable changes in the red cell series and that as the survival of the patient becomes longer the stem cells gradually and somewhat irregularly give way to plasma cells and lymphocytes. It may be hypothesized that early in the disease there is a compensatory increase of the number of normally occurring stem cells (myeloblasts) in a vain effort to overcome the maturation arrest and that these stem cells disappear in the latter stages and a coincident increase of lymphocytes and plasma cells occurs.

Lesions in Cardiac Conduction System in Rheumatic Fever—Gross and Fried examined 110 human hearts to determine the nature and frequency of the lesions occurring in the

Tawara node and bundle of His in rheumatic fever. Sixty of these cases represent active rheumatic fever, twenty-five cases inactive rheumatic fever and twenty-five cases nonrheumatic material. In active rheumatic fever there occurs a variety of inflammatory and vascular phenomena within the horizontal conduction system as well as in the surrounding tissue. Even when studied in few representative specimens from each bundle, the incidence of these lesions was approximately 66 per cent in the active material. It is probable that a study of more sections would have indicated a higher incidence. Very few of these lesions are of a specific or highly characteristic nature. The inactive rheumatic cases showed few pathologic changes. This is in keeping with the functional differences observed as between these two groups. There is a high incidence of inflammatory lesions in the collagenous extension of the septum fibrosum. The possible mechanisms concerned with the spread of the rheumatic infection to the bundle tissue is discussed.

American Journal of Physiology, Baltimore

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- Age and Tissue Respiration J M Pearce New York—p 245
Muscle Tonus Intramuscular Pressure and Venopressor Mechanism Y Henderson, A W Oughterson, L A Greenberg and C P Searle New Haven Conn—p 261
Air Movement as Stimulus to Skin Reflex Effects on Muscle Tonus and Indirectly on Circulation of Blood Also Effects of Therapeutic Baths Y Henderson, A W Oughterson, L A Greenberg and C P Searle New Haven Conn—p 269
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Mechanism of Hematopoietic Action of Cobalt J M Orten New Haven Conn—p 414
Vitamin G Concentrates as Preventives Against Black Tongue with Parallel Studies of Same Concentrates in Diets of White Rats L E Booher New York and G H Hunsmann Washington D C—p 429
*Circulatory and Visual Effects of Oxygen at Three Atmospheres Pressure A R Behnke H S Forbes and E P Motley Boston—p 436
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Evidence of Nonsegmental Character of Spinal Reflexes from an Analysis of Cephalad Effects of Spinal Transection (Schiff Sherrington Phenomenon) T C Ruch New Haven Conn—p 457
Cardiovascular Responses of Preadolescent Boys to Muscular Activity E C Schneider and C B Crompton Middletown Conn—p 473
Influence of Divided Dosage of Gonadotropic Extracts in Immature Male Rat F Bischoff Santa Barbara Calif—p 483
Changes in Permeability of Red Corpuscles in Shed Blood to Glucose J M D Olmsted Berkeley Calif—p 488
Values for Number Size and Hemoglobin Content of Erythrocytes in Normal Dogs Rabbits and Rats M M Wintrobe H B Shumacker Jr and W J Schmidt Baltimore—p 502
Effect of Estrin on Activity of Anterior Lobe of Pituitary H L Fevold F L Hisaw and R Greep Madison Wis—p 508

Effects of Oxygen at Pressure of Three Atmospheres

—Behnke and his co-workers observed that oxygen at a pressure of three atmospheres (30 pound gage) can be breathed by healthy men for three hours without distressing symptoms. During the fourth hour a progressive contraction of the visual field with dilatation of the pupils and some impairment in central vision is the most constant criterion of oxygen toxicity. Circulatory changes indicative of peripheral vascular constriction are associated with the visual impairment and culminate during the fourth hour in an abrupt rise of systolic and diastolic blood pressure, increase in pulse rate and extreme pallor of the face. At this stage the subjects experience dizziness and a feeling of impending collapse. A condition of partial stupor is indicated by the facial expression and the slowed mental responses. Rapid and complete recovery attended by a feeling of alertness and stimulation takes place within an hour after air is substituted for oxygen.

Am J Roentgenol & Rad Therapy, Springfield, Ill

35 1-144 (Jan) 1936

- *Hereditary Occurrence of Enlarged Parietal Foramina Their Diagnostic Importance O H P Pepper and E P Pendergrass Philadelphia—p 1
Osteolytic Lesions Involving Calvarium E P Pendergrass and A A de Lorimer Philadelphia—p 9
Metabolic Craniopathy S Moore St Louis—p 30
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*Three Zones of Simple Pleural Effusions J Kunitz New York—p 57
Large Aneurysm of Descending Thoracic Aorta with Retroperitoneal Extension B S Putts and R D Bacon Erie Pa—p 59
Roentgenologic Diagnosis of Abscess on Concave Surface of Liver J M Miles New Orleans—p 65
Rectification of Errors in Diagnosis of Movement of Ureteral Calculi W B Frior Baltimore—p 70
Hodgkin's Disease of Bone Marrow and Liver Without Apparent Involvement of Lymph Nodes H Herscher Hines Ill—p 73
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Separate and Combined Use of Artificially and Naturally Produced Radium W H Cameron New York—p 96

Hereditary Occurrence of Enlarged Parietal Foramina

—The interest of Pepper and Pendergrass in enlarged parietal foramina was aroused by the presence of the anomaly in a patient in the medical ward of the Hospital of the University of Pennsylvania. The patient stated that other members of his family had the same anomaly. The authors were able to examine the patient's mother, his son, his sister and her four children. The patient's grandmother was dead, but the members of the family all were positive that they had frequently felt the "holes" in her head. The mother exhibited very large foramina, as did the son. These were easily found by palpation. The patient's sister had bilateral foramina which were small, were larger than normal. This sister has four children. The oldest a boy, has foramina similar to his mother's, the second child, a son, has openings measuring 7 mm on the right and 3 mm on the left. Of the two younger girls the elder has bilateral foramina of top normal size, the younger of normal size. A search of the literature proves the authors' observations not unique, for they have found the report of one similar family. Also in the older literature there are a few hints in this direction. The most important report is that of Goldsmith in 1922. He points out that the inheritance does not seem to fall in line with any of the usual laws of inheritance. He believes that the openings are larger in the young and that at first it is a single opening, which is later divided by the ossification of a median bridge. He also believes that the defect may disappear as adult life is reached. Some support for these opinions is supplied by the authors' study of still another family exhibiting large foramina. One of their roentgenologic staff readily recognized the lesion in the films exhibited at a roentgenologic meeting. The defects shown in the skull films of a young girl were presented as possibly due to Hand-Schuller-Christian's disease, but to one who had once seen the picture of enlarged parietal foramina the diagnosis was obvious. In addition to the girl they have been able to examine her mother, her sister, two aunts and three cousins. Also the family insist the child's grandfather has the same "holes." One aunt has demonstrable foramina, but the other and the cousins are normal. The child's sister, only 7 months of age, has a large central defect. The child herself, 2 years of age, shows a large merged defect and also the not uncommon anomaly of the occipital bone called by some the "Inca bone." Apparently the defect is an erratic hereditary anomaly of ossification bearing no relation to any disease of the skeleton. There seems to be little support for the claims made by several writers that it results from increased intracranial pressure and is more apt to occur in those with small skulls. The anomaly is of only slight importance clinically, although the defects might be found and misinterpreted. The cranial defects with which enlarged parietal foramina might be confused are Hand-Schuller-Christian's disease, syphilis, secondary neoplasm, trephine openings, dysostosis (cleidocranial) of the cranial bones, meningocele and osteoporosis circumscripta. The roentgenologist will usually have the responsibility of making the differ-

ential diagnosis and will have the opportunity of identifying such instances of anomalous parietal foramina as he may encounter

Three Zones of Simple Pleural Effusions—Kaunitz describes the three zones of simple pleural effusions from below upward as follows 1 A radiopaque zone made up of a large volume of liquid displacing the lung upward and casting a dense curved roentgenographic shadow 2 A radiotranslucent zone consisting of a moderate volume of liquid interposed between the lung and chest wall and casting a moderately dense roentgenographic shadow 3 A radiotransparent zone representing a film of liquid too thin to cast a roentgenographic shadow

Annals of Internal Medicine, Lancaster, Pa

9 823 1042 (Jan) 1936

- Chemical Studies in Myasthenia Gravis Mildred Adams M H Power and W M Boothby Rochester Minn—p 823
Metabolism of Creatine and Creatinine in Muscle Disease A T Mithorath and H G Wolff New York—p 834
*Experimental Thrombopenic Purpura Cytologic and Physical Changes in Blood L M Tocantins Philadelphia—p 838
Comparison of Rate of Absorption from Normal and Burned Tissues E C Mason, Pearl Paxton and H A Shoemaker Oklahoma City—p 850
Studies in Multiple Sclerosis VIII Etiologic Factors in Multiple Sclerosis T J Putnam Boston—p 854
Correlations of Endocrine System D L Thomson Montreal—p 864
*Arteriosclerosis and Hypertension in Diabetes H F Root and T P Sharkey Boston—p 873
Present Status of the Problem of Rheumatism and Arthritis Review of American and English Literature for 1934 P S Hench Rochester Minn W Bauer Boston A A Fletcher Toronto D Christ Los Angeles T Hall Boston and T P White Charlotte N C—p 883

An Experimental Thrombopenic Purpura—Tocantins describes various changes in the blood of dogs with experimental thrombopenic purpura and analyzes the extent of the correlation between these changes and the external manifestations of the disease Morphologic variations in the platelets were regularly observed soon after a diminution in their level in the peripheral blood as well as preceding their return to normal after a period of thrombopenia The volume and rate of output of blood per unit time from a skin wound were increased and irregular during the acute phase of purpura and became markedly decreased in the first few days following recovery The highest correlations found were between the number of platelets and the degree of clot retraction and between the latter and the mean bleeding time The correlations were of such a degree as to indicate that factors other than those under analysis will be found to play important parts in the mechanism of normal and impaired hemostasis

Arteriosclerosis and Hypertension in Diabetes—Root and Sharkey say that there is an excess of arteriosclerosis in the coronaries, aorta and legs in diabetic patients as compared with nondiabetic subjects Among 175 diabetic deaths hypertension occurred in 54 per cent All the characteristic vascular lesions of diabetes (retinal hemorrhages, coronary occlusion, gangrene) occurred in cases of diabetes without hypertension as well as in cases with hypertension The incidence of these vascular complications was greater in the hypertensive group as if hypertension acted as an additional factor increasing greatly the tendency to such lesions The association of large vessel arteriosclerosis constantly whenever arteriosclerosis was present suggested that changes in the large arteries occurred first The etiology of arterial hypertension is divided under five heads (1) circulating substances including hormones (2) influence of the nervous system, (3) structural changes in the vascular system (4) infections and allergy and (5) constitutional factors There is no clear evidence in the authors' cases of unusual psychic or nervous make up on which to base the theory that hypertension occurred first and vascular disease followed Similarly the roles of infections and allergy lack support In diabetes infections of the kidneys are common and hypertension may follow such infections Somewhat more reasonable is the theory that the spotty lesions of arteriosclerosis represent the results of low grade and repeated bacterial invasion or degeneration due to bacterial toxins That the predisposition to diabetes is inherited as a mendelian recessive characteristic has received support from the studies of Pincus and White The authors' belief is that the premature and excessive development of vascular disease occurs predominantly in muscular

arteries under the greatest physical strain especially in obese patients, and is due to the metabolic changes of diabetes The coronary and leg arteries are chiefly involved, although changes in the arterioles also are found The necessity of insulin in the glycogen metabolism of muscle and especially for the completion of the lactic acid cycle must be of some significance in this connection, although the details are as yet undemonstrated The importance of the disordered lipid metabolism more easily demonstrated by present chemical and pathologic methods, is better understood Hypertension then is an important contributing factor in the clinical course of the disease because it imposes additional strain even when the patient has lost his obesity and accentuates greatly the vascular changes in coronary and leg arteries A further suggestion as to the metabolic factor in the arteriosclerosis of diabetes is the fact that with modern treatment with insulin and diet more normally balanced the frequency of arteriosclerosis in the legs of diabetic children is diminishing The objective in the future should be the earlier possible diagnosis of diabetes and its more aggressive treatment The final explanation will take full cognizance of the interrelationship of the endocrine glands of the parts played by pre-existent obesity, by infections, especially of the kidneys, and by inheritance

Archives of Dermatology and Syphilology, Chicago

33 209 412 (Feb) 1936

- Histiocytoma Cutis F E Senechal and M R Caro Chicago—p 209
Phenolphthalein Dermatitis Experimental Study Including Reproduction of Eruption in Skin Transplants F C Knowles Philadelphia H B Decker and R P Kandle Camden N J—p 227
*Extensive Pigmented Nevus Associated with Primary Melanoblastosis of Leptomeninges of Brain and Spinal Cord Report of Case E W Netherton Cleveland—p 238
Hodgkin's Disease of Scalp Report of Case N M Wrong Toronto—p 259
Mycosis Fungoides with Psoriasis-like Symptoms E A Oliver Chicago—p 267
*Direct Microscopic Examination of Skin Method for Determination of Presence of Fungi J H Swartz Boston and N F Conant Durham N C—p 291
Study of Group of Handlers of Arsenic Trioxide H G Irvine and D D Turnachiff Minneapolis—p 306
Lichen Simplex Chronicus One Hundred and Seventy Consecutive Cases Encountered in Private Practice D E H Cleveland and Conner B C—p 316
Psoriasis Brief Historical Review P E Bechet New York—p 327
Incidence of Dermatophytosis at the Boston City Hospital J W Williams Cambridge Mass—p 335

Extensive Pigmented Nevus—Netherton reports a case of extensive pigmented nevus associated with primary diffuse melanoblastosis of the meninges The correlation of these observations is difficult and depends on the ultimate solution of the origin of nevus and of the debated questions concerning the embryologic development of the meninges It is possible that the nevus and the changes in the meninges are related congenital malformations resulting from early developmental disturbances in the ectoderm and that such lesions may be considered as filling the gap that exists between extensive benign melanomas of the skin and primary melanoma of the meninges The diffuse and extensive involvement of the piaarachnoid interfered with absorption of the cerebrospinal fluid sufficiently to cause fatal hydrocephalus

Direct Microscopic Examination of Skin—Swartz and Conant state that the treatment of scrapings from the skin with 5 per cent potassium hydroxide followed by washing with water and staining in lactophenol and cotton blue, makes possible the easy determination of the presence of fungi This method of preparing microscopic specimens for examination is simple in that it adds only two steps to the more common method using potassium hydroxide and is effective in that the fungi are definitely stained while the various confusing artefacts are eliminated from the picture This is particularly true of the mosaic growth that occurs commonly in preparations made with potassium hydroxide This material does not seem to be the result of treatment with potassium hydroxide since it can be found in scales treated with xylene or with chloral hydrate and acacia It was found to be soluble in either 95 per cent alcohol absolute alcohol and phenol It could not be stained with sudan III or scarlet red or blackened with osmic acid While fungi were readily stained with lactophenol and cotton blue mosaic material occurring in the same

preparation did not stain and was, in fact, entirely eliminated. In the presence of polarized light there was no evidence that the mosaic material was composed of crystalloid forms. Whatever the nature of the mosaic growth, the authors feel that they have presented sufficient proof that it is not a fungus. The staining of normal fungi in scales with lactophenol and cotton blue the failure to find partially degenerated forms in the same preparation in which both mosaic material and fungi occurred, and the failure to find morphologic connections between normal hyphae and these mosaic forms seem to disprove convincingly the theory that this material is a degenerate form of fungus.

Archives of Otolaryngology, Chicago

23 1136 (Jan.) 1936

- *Tuberculosis of Larynx Requiring Tracheotomy M C Myerson New York—p 1
- Research Report on Experimental and Clinical Sinusitis R A Fenton and O Larsell Portland Ore—p 18
- Puncture of Internal Jugular Vein in Cases of Mastoiditis L M Freedman Boston—p 29
- *Ventricular Puncture Preliminary to Operation for Acute Suppurative Petrositis S Rosen and A Kaplan New York—p 35
- Acoustic Stimulation of Inner Ear by Application of Sound into Cavity of Middle Ear H Kobrak J R Lindsay and H B Perlman Chicago—p 39
- Histologic Variations in Middle and Inner Ears of Patients with Normal Hearing L M Polvogt Baltimore—p 48
- Histologic Changes in Temporal Bone in Osteitis Deformans (Paget's Disease) J G Wilson and B J Anson Chicago—p 57
- Intra Uterine and Neonatal Otitis Study of Seven Cases Including a Case of Otitic Meningitis F A Hemsath New York—p 78
- Vessels of Stria Vascularis with Especial Reference to Their Function J J Belemmer Baltimore—p 93

Laryngeal Tuberculosis Requiring Tracheotomy —

Myerson states that tracheotomy was performed in nine of 728 cases of laryngeal involvement in a total of 6,516 cases of pulmonary tuberculosis observed during a period of three years. Not every patient with pulmonary tuberculosis who becomes hoarse has specific involvement of the larynx. Several patients referred for treatment of tuberculosis because they were hoarse were found to have a nontuberculous lesion (cyst, vascular polyps, paralysis and carcinoma). Not every patient with pulmonary tuberculosis who is hoarse has tuberculosis of the larynx, although this should be suspected. Tracheotomy does not indicate a hopeless prognosis, nor does the presence of laryngeal involvement. Laryngeal involvement diminishes the prospect of recovery but does not doom the patient. Laryngeal obstruction is invariably caused by a productive lesion. The most frequent cause of laryngeal stenosis is a position of the vocal cord in the midline or almost in the midline which is caused by fixation of the crico arytenoid joint. The prognosis is always better in those cases in which the pulmonary lesions show a tendency to recovery and in which the sputum contains few or no tubercle bacilli. The same conditions influence the prospect in a case of tuberculous involvement of the tracheotomy wound. When the tracheal wound comes in contact with a large amount of bacillus-laden sputum, it usually becomes infected.

Ventricular Puncture—To facilitate the lifting of the dura from the bone in operations for acute suppurative petrositis, preliminary puncture of the lateral ventricle on the side opposite to the petrositis was suggested and tried by Kaplan. In most neurosurgical clinics the lateral ventricle is tapped during some stage of every suboccipital craniotomy. The reduced dural tension that follows is of great help in the exposure that Rosen and Kaplan use. To their knowledge, this preliminary step of ventricular puncture as part of the operation for suppuration of the petrous pyramid has not been mentioned or suggested heretofore. The ease with which the dura is stripped from the bone after emptying of the opposite lateral ventricle leads them to present the practical and theoretical advantages of the procedure. 1 Emptying of the lateral ventricle in the hands of an experienced neurosurgeon is attended with little risk. More than 100 consecutive ventriculographies have been performed at the Mount Sinai Hospital without any serious complication. The fact that the procedure was performed on patients in whom an intracranial neoplasm was suspected and in many instances found, indicates that the danger of simple drainage of the lateral ventricle is almost negligible. 2 In the cases in which petrositis is suspected, one cannot always be certain that an abscess of the brain has been

excluded. Drainage of spinal fluid, particularly if the abscess is situated in the cerebellum, may be followed by disastrous results. 3 Ventricular puncture may give a clue as to the presence of a cerebral abscess. Evidence of a dilated or displaced ventricle should make one suspicious of an expanding or obstructing cerebral lesion. 4 In doubtful cases in which exploration has failed to prove the presence of petrous suppuration subsequent ventriculography can be performed with ease through an already existing trephine opening.

Arch of Physical Therapy, X-Ray, Radium, Chicago

17 164 (Jan.) 1936

- *Response of Essential Hypertension and Diabetes Mellitus to Small Doses of X-Ray J H Hutton W L Culpepper and E C Olson Chicago—p 7
- New Vaginal Diathermy Electrode E A Horowitz and W Bierman New York—p 15
- Treatment of Carcinoma of Lip L Hollander Pittsburgh—p 17
- New Air Spaced Cuff Electrode C K Gale New York—p 25
- Present Trends in Management of Hypertrophied Prostate I R Sisk Madison Wis—p 27
- Diathermy in Diseases of Eye O B Nugent Chicago—p 37

Response of Essential Hypertension and Diabetes to X-Rays—Hutton and his co-workers have had under their supervision 177 cases of essential hypertension, twenty-one cases of hypertension and diabetes existing in the same patient and forty-six cases of diabetes mellitus without hypertension. Their use of X-rays in the treatment of diabetes mellitus and essential hypertension is based on the belief that these two syndromes are due to some abnormal function of the pituitary or adrenals and that this abnormality can be corrected by irradiation of these structures. Among the patients having essential hypertension, forty-three either had an inadequate amount of treatment or could not be followed. Of those who had an adequate amount, ninety-nine definitely improved both as to relief of symptoms and as to reduction of blood pressure. Of the twenty-one patients having hypertension and diabetes, eight were improved as to both conditions, seven as to hypertension only and three as to diabetes only, and three either had an insufficient amount of treatment or could not be followed. Of the forty-six diabetic patients, ten received an inadequate amount of treatment. Of the remaining thirty-six, twelve were unimproved, five reported symptomatic improvement but without change in their carbohydrate tolerance and nineteen experienced some improvement both symptomatically and as regards carbohydrate tolerance. The best responses have been obtained with small doses of X-rays. Of 159 cases reported as being treated by other men, 137 are said to have experienced improvement following treatment. The final evaluation of this form of treatment depends on time and the accumulation of a large series of cases. The authors do not offer the treatment as a cure but as an addition to the treatment of these two syndromes.

Endocrinology, Los Angeles

20 1136 (Jan.) 1936

- Action of Anterior Pituitary Hormones on Basal Metabolism of Normal and Hypophysectomized Pigeons and on Paradoxical Influence of Temperature O Riddle Guinevere C Smith R W Bates C S Moran and E L Lahr Cold Spring Harbor N Y—p 1
- Uterine Response to Pitocin M R White and J P Pratt Detroit—p 17
- Studies on Ovarian Dysfunction III Menopause F Albright Boston—p 24
- Experimental Production of Ovarian Refractoriness to Anterior Hypophyseal Stimulation in Monkey F L Hisaw R Hertz and H L Fevold Madison Wis—p 40
- Effects of Two Ovarian Hormones on Castrated Human Females C A Elden Rochester N Y—p 47
- Calorigenic Action of Extracts of Anterior Lobe of Pituitary in Man W O Thompson S G Taylor 3d Phoebe K Thompson Chicago
- S B Nadler New Orleans and Lois F N Dicke Chicago—p 52
- Endocrine Dwarfism Third Report R L Schaefer Detroit—p 64
- Clinical Significance of Electrical Impedance Determination in Thyroid Disorders J W Horton Boston A C Van Ravenswaay Boonville Mo S Hertz and G W Thorn Boston—p 72
- Fundamental Similarity in Development of Gonadotropic Response in the Immature Guinea Pig and Rat S C Freed and A Coppock Chicago—p 81
- Chronic Hypoglycemia M A Goldzieher New York—p 86
- Influence of Cortico Adrenal Extract on Course of Bacterial Intoxications in Guinea Pigs R W Whitehead and C A Fox Denver—p 93
- Reid Hunt Reaction and the Thyrotropic Hormone H Wiesbader New York—p 100
- Investigation of Hormone Content of Saliva A I Weisman and C C Yerbury New York—p 103

Journal of Allergy, St Louis

7 101 202 (Jan) 1936

- Some Observations on Effect of Circulation on Skin Reactions F F Furstenberg and I N Gay Baltimore—p 101
- Intracutaneous Tests in Normal Individuals Analysis of One Hundred and Fifty Subjects M H Grow and N B Herman Baltimore—p 108
- Skin Exciting Activity of a Ragweed Pollen Extract as Measured by Its Content of Three Nitrogen Fractions H Osgood and R S Hubbard Buffalo—p 112
- Air Cleaning as an Aid in Treatment of Hay Fever and Bronchial Asthma L H Cripe and M A Green Pittsburgh—p 120
- Ultrafiltration of House Dust Extracts W C Spain and J M Newell New York—p 134
- *Experiments in Poison Ivy Sensitivity H Field and M B Sulzberger New York—p 139
- Sensitivity to Bacillus Dysenteriae B G Efron and D N Silverman New Orleans—p 145
- Studies on Relation of Micro Organisms to Allergy III Year's Survey of Daily Mold Spore Content of Air S M Feinberg and H T Little Chicago—p 149

Experiments in Sensitivity to Poison Ivy—Field and Sulzberger experimentally sensitized 7 persons presumably never previously in contact with poison ivy by the application of skin tests with an 8 per cent acetone extract of the leaf. The incubation period required for the development of this induced eczematous hypersensitivity was from nine to ten days. When the subject was given patch tests after the skin had become sensitized, the time required for the development of the clinically manifest skin reaction regularly was approximately from twenty-four to seventy-two hours depending somewhat on the concentration of the extract applied. The sensitization was of such a degree that the individual previously not reacting at forty eight hours even to concentrations as high as 1:100 later reacted strongly to a 1:1,000,000 dilution of the extract employed. The subject showed marked variations in reaction to the same extracts on repeated patch testing. There were variations depending on the time of the test and also constant variations depending on the skin area tested. The result not only warns against drawing too definite conclusions from one or a few patch tests applied at the same time but also serves to explain certain discrepancies of results and unexplained variations in reactions as well as false negatives.

Journal of Experimental Medicine, New York

63 157 302 (Feb 1) 1936

- Change in Rabbit Fibroma Virus Suggesting Mutation I Experiments on Domestic Rabbits C H Andrewes Hampstead London England—p 157
- Id II Behavior of Variant Virus in Cottontail Rabbits R E Shope Princeton N J—p 173
- Id III Interpretation of Findings C H Andrewes Hampstead London England and R E Shope Princeton N J—p 179
- Croup Specific A Substance in Horse Saliva II K Landsteiner New York—p 185
- Pathogenesis of Pneumococcal Infections in Mice G Rake New York—p 191
- Respiratory versus Gastro-Intestinal Infection in Poliomyelitis S Flexner New York—p 209
- Study of Generalized Vaccinia in the Chick Embryo G J Buddingh Nashville Tenn—p 227
- Studies on Etiology of Rabbit Pox I Isolation of Filtrable Agent Its Pathogenic Properties Louise Pearce P D Rosahn and C K Hu New York—p 241
- Id II Clinical Characteristics of Experimentally Induced Disease P D Rosahn C K Hu and Louise Pearce New York—p 259
- Blood Plasma Protein Regeneration Controlled by Diet Effects of Plant Proteins Compared with Animal Proteins Influence of Fasting and Infection J B McNaught A C Scott F M Woods and G H Whipple Rochester N Y—p 277

Respiratory versus Gastro-Intestinal Infection in Poliomyelitis—Flexner points out that the debated problem of the gastro-intestinal versus the respiratory mode of infection in poliomyelitis has been restudied by several investigators recently, with conflicting conclusions. Toomey's methods are so severe and artificial that his results cannot be regarded as simulating a natural mode of infection. The author repeated the tests of Kling and Levaditi but in a far more comprehensive manner than was followed by them, and like Clark and his associates who early repeated them he has failed to confirm them. He does not find *Macacus cynomolgus* and *rhesus* to differ in any essential way in their response to the presence of the virus of poliomyelitis in the body. *Cynomolgus* do not respond to virus introduced into the stomach when con-

tinuation of the buccal and nasal cavities is avoided, they respond, as do *rhesus* to virus directly injected into the intestine when the virus passes into the intestinal wall and makes the necessary nerve fiber contact. Both *Macacus cynomolgus* and *Macacus rhesus* that have resisted feedings of virus are subject to nasal instillations of the same strains of virus and in the same degree. On the basis of his present experiments the author reaffirms the conclusion previously arrived at by him and his co-workers, and confirmed independently by investigators in Europe and America, that the only established port of entry of the virus of poliomyelitis into the central nervous system of man is the nasal membrane and especially the olfactory nervous areas in that membrane.

Journal of Infectious Diseases, Chicago

58 1 128 (Jan Feb) 1936

- Opsonins for *Diplococcus Morbillorum* and for *Streptococcus Scarlatinae* in Convalescent Measles Serum Convalescent Scarlet Fever Serum and Placental Extract Ruth Tunnichiff Chicago—p 1
- Demonstration of Capsules About Hemolytic Streptococci with India Ink or Azo Blue E M Butt C W Bonyne and R L Joyce Los Angeles—p 5
- Failure to Infect Monkeys with Poliomyelitis Virus Through Isolated Intestinal Loops E H Lennette and N P Hudson Chicago—p 10
- Studies on Bactericidal Action of Bovine Whole Blood and Serum Toward *Brucella Abortus* and *Brucella Suis* M R Irwin B A Beach and F N Bell Madison Wis—p 15
- Spontaneous Contamination of Bacterial Culture by Organism Resembling *Hartmannella Castellani* Note L E Shinn and P B Hadley Pittsburgh—p 23
- Growth Stimulating Factors for Micro-Organisms M Sahyun P Beard E W Schultz J Snow and E Cross Stanford University Calif—p 28
- Studies on Extraction of Precipitable Substance from Genus *Brucella* Dorothy O Reiter Chicago—p 45
- Salivary Gland Disease of Mice Juanita Thompson New York—p 59
- Destruction of Tubercle Bacilli Within Phagocytes in Vitro B J Clawson Minneapolis—p 64
- Rural Typhoid Fever B Johan Budapest Hungary—p 70
- Studies on Inflammation XI Invasiveness and Virulence in Relation to Resistance V Menkin Boston—p 81
- Effect of Dissociation of Streptococci on Their Fibrinolytic and Anti-clotting Activity Ruth Tunnichiff Chicago—p 92
- Properties of Homogenized Herpes Virus C W Buggs and R G Green Minneapolis—p 98
- *Comparative Observations on Streptococci from Human Gastro-Intestinal Ulcerations and from Bovine Mastitis J C Torrey and Elizabeth Montu New York—p 105
- *Pathogenesis of Actinomycosis Recovery of Actinomycetes like Organisms from the Normal Mouth F T Lord and L D Trevett Boston—p 115
- Studies on Bacterial Nutrition II Distribution of Growth Stimulating Factor in Animal and Plant Tissues S A Koser F Saunders I I Finkle and R C Spoelstra Chicago—p 121
- Liquefaction of Gelatin by *Salmonella* Type *Diser* es Salarm Note E O Jordan Chicago—p 128

Streptococci from Human Gastro-Intestinal Ulcerations and from Bovine Mastitis—Torrey and Montu made a comparative study of authentic strains of the Bargaen diplo-streptococcus of ulcerative colitis of selected enterococci associated with the same disease of representative strains of Saunders streptococcus of gastroduodenal ulcers and of streptococci associated with bovine mastitis which leads them to the following conclusions. The Bargaen strains although exhibiting certain features in common such as the splitting of raffinose differed greatly in resistance to heat and in their antigenic constitution as indicated by agglutination and agglutinin absorptions. One strain exhibited all the biochemical attributes of an enterococcus and three others the marked resistance to heat characteristic of the enteric streptococci. It would seem proper to classify them as variants of the enterococcus. The strains from gastric ulcers and gastric ulcer carcinoma tissue did not show as great a degree of cultural and serologic homogeneity as has been reported by Saunders for other series of cultures isolated from these sources. A connecting link with the Bargaen group was indicated by the close serologic relationship of two of them to a type Saunders strain. The other three Bargaen strains were agglutinated only to a slight degree if at all, by the four Saunders strain serums. With one exception none of the ten Saunders strains split raffinose. Biochemical and serologic tests indicated only exceptionally any relationship between the streptococci associated with ulcerative processes in the human gastro-intestinal tract and *Streptococcus mastitidis* of bovine origin. On the other hand three streptococcus strains from mastitis milk not related

culturally or serologically to *Streptococcus mastitidis* exhibited such relationships to two enterococcus strains from ulcerative colitis and to certain of the Saunders peptic ulcer and carcinoma strains. These and other observations suggest a bovine origin for certain enterococcus-like organisms capable of invading human tissues.

Pathogenesis of Actinomycosis—The aerobic-anaerobic organisms isolated by Lord and Trevett from the normal mouth appear to be identical with the actinomycetes of the Wolff-Israel type in morphology and staining reaction. The character of their initial growth in bouillon, the readiness with which growth occurs under aerobic conditions and failure to produce lesions characteristic of actinomycosis in animals make it impossible to classify them as belonging to the group of the actinomycetes of the Wolff-Israel type. Organisms of the Wolff-Israel type have not been demonstrated outside the human or animal body and in view of their biologic character it is unlikely that multiplication takes place in the outside world under any ordinary conditions. Implantation of the parasite within the tissue through injury by a foreign body may be a factor. There are many instances recorded in the literature of the presence in the lesions of foreign bodies mostly of vegetable nature, but in the majority of cases there is no history of a foreign body and none is found in the lesions. As the most common site of the disease is the region about the head and neck with abdominal involvement next in frequency and the pulmonary form in a relatively small proportion of cases the buccal cavity is to be regarded as the port of entry, with secondary invasion of the neighborhood by direct extension and the abdomen and lungs through swallowed or inhaled organisms.

Journal of Lab and Clinical Medicine, St Louis

21 335 444 (Jan.) 1936

- Reaction of Normoblastic Bone Marrow to Liver Extract O P Jones Minneapolis—p 335
- Studies of Plasma Proteins and Cholesterol in Normal White and Colored Individuals and in Negroes with Arteriosclerosis J E Andes R H Kampmeier and C C Adams New Orleans—p 340
- Relation of Thyroid Gland to Hematopoiesis I Experimental Total Thyroidectomy in Rabbit J C Shaibe and J D Bisgard Omaha—p 347
- Attempts to Apply Acetylene Method of Determining Cardiac Output to Dog Alice B Mathis and J E Williams Cleveland—p 354
- *Prevention of Anaphylactic Shock Due to Horse Serum by Injection of BCG E M Fraenkel and R J V Pulvertaft London England—p 359
- *Study of Effects of Vaccine Injections on Skin Sensitivity M D Touart W S Thomas and W L Tucker New York—p 365
- Normal Range of Leukocyte Count Determined Weekly Over an Extended Period I R Tuster Glens Falls N Y—p 376
- Significance of Serum Inorganic Sulfate Concentrations in Bright's Disease W S Hoffman and J V Mansfield Chicago—p 380
- Water Retention in Obesity as Determined by Volhard Dilution and McClure Aldrich Tests M G Wohl and L N Ettelson Philadelphia—p 390
- Effects of Hyperpyrexia on Human Blood Count Blood Chemistry and Urine J T Simon Kansas City Kan—p 400
- Blood Sugar in Uncomplicated and Untreated Neurosyphilis P G Schube Boston—p 404
- Mouse Protection Test for Standardizing Antimeningococcus Serums Lucy Vishulow and Mildred Melman New York assisted by Rena Sklarsky—p 406
- Rapid Slide Test for Serologic Diagnosis of Typhoid and Paratyphoid Fevers H Welch and C A Stuart Providence R I—p 411
- Rapid Method for Preparing Antigens for Wassermann Reaction C A Hunter Vermillion S D—p 417
- Dark Field Illumination in Diagnosis of Tuberculosis and Malaria C Goosmann Cincinnati—p 421
- Blood Calcium Determination Using Standard Calcium Chloride Solution I Schwartz New York—p 425
- Mechanical Device for Preparing Fine Suspensions of Tubercle Bacilli and Other Micro-Organisms H J Corper and M L Cohn Denver—p 428
- Modifications in Colorimetric Determination of Plasma Proteins by Folin Phenol Reagent D M Creenberg and Tatiana N Miroslubova Berkeley Calif—p 431
- Simple Efficient and Inexpensive Device for Drying Pipets and Other Laboratory Glassware H Foy Salonika Greece—p 435

Prevention of Anaphylactic Shock—Fraenkel and Pulvertaft found that repeated doses of BCG emulsion in saline solution produce a state in the sensitized animal which protects it from the anaphylactic shock due to horse serum. With the desensitizing or shocking dose much in excess of the fatal dose the protection becomes less effective. Single small doses

before or after sensitization do not induce the state of protection against serum shock. The injection of attenuated or killed bacilli or the production of abscesses with other bacteria does not induce any degree of protection.

Effects of Vaccine Injections on Skin Sensitivity—It appears to Touart and his co-workers that an increase in skin sensitivity after vaccine injections occurs only when too large a dose of killed bacteria or some other factor, such as the use of a mixed vaccine, establishes a reservoir of antigenic material in or beneath the skin. Under these circumstances a lesion results which has the effect of a focus of infection. An increase in bacterial allergy may follow if a series of such injections is given. Treatment injections with vaccine reactions as guides are adjusted by the authors in bulk and concentration so as to produce a minimum of local reaction. Thus the production of focal lesions and an increase in hypersensitivity have usually been avoided. Retests in patients under treatment with mixed vaccines composed of one organism which produced a large late local reaction after the original skin tests and of others which produced smaller reactions have at times revealed increased skin sensitivity to some of these organisms. At other times it was seen after retests that reduction in skin sensitivity was proceeding at a more rapid pace in the case of some of the organisms contained in a mixed vaccine than in the case of others. Further injections of the same organisms but as single strain vaccines have appeared to rectify these inequalities. The intense local reaction produced by the organism in a mixed vaccine to which the patient is most sensitive seems to localize the less potent organisms within the reaction to such an extent that little desensitizing effect can be produced by them. Such a local reaction may even act in a manner similar to that of a focus of infection from which sensitizing doses of the weaker bacteria repeatedly escape. Not only did a diminution or disappearance of the delayed type of skin sensitivity accompany relief of symptoms but also these two synchronous phenomena proceeded in direct proportion to each other. The foregoing suggests that the symptoms which were relieved may have been allergic manifestations set up by the particular organisms recovered from the patient and used in treatment. So far as specific desensitization to the particular organisms used in treatment is concerned no greater changes were produced by treatment in unimproved patients than those which would have occurred without treatment. Persistence of an undrained focus of infection seems to be the usual cause of failure of autogenous vaccine therapy to be followed by improvement of symptoms and by regressive changes in skin sensitivity.

Effects of Hyperpyrexia on Blood Chemistry—Simon observed the effects of artificial fever on the blood count, urine and blood chemistry. This study is based on seventy one treatments given ten patients. He noticed that during treatment the blood is first diluted but later becomes concentrated. The urine shows an increasing alkalinity and occasionally clearing of albuminuria. The blood sugar level shows a marked rise with no glycosuria when the level reaches to the accepted renal threshold or beyond. Creatinine and nonprotein nitrogen show more of an increase than can be considered due to concentration. Blood chlorides decrease approximately 2 per cent. The white blood count is increased by fever treatments. This is first noticed in the granulocytes and is due partly to production of immature forms and partly to mobilization of older types. Any experimental work of this nature should be under standard conditions and should cover a sufficiently large number of cases to allow for individual variation.

Journal of Nervous and Mental Disease, New York

83 125 248 (Feb.) 1936

- Questionnaires and Study of Perinatal C Landis New York—p 175
- Some Problems in Obstetrics Discussed from Neuropsychiatric Standpoint A J Rosanoff Los Angeles—p 135
- Reactive Psychosis in Response to Mental Disease in Family Lauretta Bender New York—p 143
- *Simmonds Disease Report of Case with Recovery C W Dunn Abington Pa—p 166
- Therapeutic Quatran Malaria in Treatment of Neurosyphilis Among Negroes G C Branche Tuskegee Ala—p 177

Simmonds Disease—Dunn cites a case of Simmonds disease (multiple ductless glandular sclerosis, Fata) in a girl aged 13 years with a presumptive early and successful result of

treatment The treatment consisted in the daily hypodermic administration of large doses (2 cc) of the anterior pituitary liquid (Armour) and equally larger weekly doses (10,000 rat units) of estrogenic substance (progynon-B, Schering) The period of time that treatment will have to be maintained is not known However, it has been and will be consistently reduced as normality is maintained Concerning the subject of Simmonds' disease, it is believed that Falta's classification as and the definition of "multiple ductless glandular sclerosis" more typically expresses the pathologic and clinical picture of the syndrome now known as Simmonds' disease (hypophyseal cachexia) Further, it stresses the pluriglandular therapy required to offset the pathologic atrophy ensuing in the various endocrine glands and the structures they control The success of the treatment in this particular case would seem to verify, at least in part, this conclusion

Journal of Nutrition, Philadelphia

11 1102 (Jan 10) 1936

Reflection in the Rat with an Appendix on Methods of Preparing Basic Materials for Deficient Diets S Bliss with technical assistance of F Green New Orleans—p 1

Comparative Antirachitic Efficiency of Vitamin D in Irradiated Milk Metabolized (Yeast) Milk and Cod Liver Oil R M Bethke W E Krauss P R Record and O H M Wilder Wooster Ohio—p 21

*Effect of Digestibility on Availability of Iron in Whole Wheat Ella McCollum Vahlteich, Mary Swartz Rose and Grace MacLeod New York—p 31

Protein Utilization as Affected by Presence of Small Amounts of Bran or Its Fiber Esther H Funnell Ella McCollum Vahlteich Sadie O Morris Grace MacLeod and Mary Swartz Rose New York—p 37

Influence of Ration on Vitamin C Content of Milk W H Riddell C H Whitnah, J S Hughes and H F Lienhardt Manhattan Kan—p 47

Variation in Mineral Content of Vegetables J Davidson and J A LeClerc, Washington D C—p 55

Studies on Vitamin G (B) and Its Relation to Canine Black Tongue C J Koehn Jr and C A Elvehjem Madison Wis—p 67

*Effects of Excessive Ingestion of Sodium and Potassium Salts on Carbohydrate Metabolism and Blood Pressure in Diabetic Children J McQuarrie W H Thompson and J A Anderson Minneapolis—p 77

Availability of Iron in Whole Wheat—Vahlteich and her associates fed young rats depleted to hemoglobin levels averaging 33 Gm per hundred cubic centimeters of blood at 8 weeks of age as supplements to fresh whole milk (1) whole wheat (3 Gm), yielding 0.1 mg of iron and 0.02 mg of copper, (2) whole wheat (27 Gm) with all the starch dextrinized, furnishing the same amounts of iron and copper as 1 (3) 0.1 mg of iron as ferric chloride and 0.02 mg of copper as copper sulfate Hemoglobin regeneration was best on the predigested wheat, next best on the natural wheat finely ground and poorest on the mineral supplements, the gains in six weeks amounting respectively to 96, 76 and 7 Gm of hemoglobin per hundred cubic centimeters of blood The authors believe that the ease of digestion of the dextrinized wheat has been the factor causing the better hemoglobin regeneration on this than on the wheat finely ground but not predigested

Effects of Sodium and Potassium Salts on Carbohydrate Metabolism and Blood Pressure—McQuarrie and his collaborators found that, when ingested in amounts varying between 1 and 2 Gm per kilogram of body weight daily, sodium chloride exerts a favorable influence on the carbohydrate metabolism of diabetic children taking simplified diets low in potassium This effect is usually observed on the second or third day At the same time both the systolic and diastolic blood pressure levels are elevated significantly Sodium appears to be chiefly responsible for these effects since other salts of this element as well as the chloride exert similar though less marked, effects Potassium chloride has diametrically opposite effects on both glycosuria and blood pressure In terms of chemical equivalents, potassium completely antagonizes the effects of sodium when given simultaneously in amounts as little as one third that of sodium The studies were carried out on one normal and four diabetic subjects from 13 to 15 years of age The physiologic mechanisms involved in these reactions are at present obscure but are being further investigated

Michigan State M Society Journal, Grand Rapids

35 174 (Jan) 1936

Comments on the Medical Management of Disease of Gallbladder J H Musser New Orleans—p 1

Some Surgical Aspects of Disease of Gallbladder F A Collier and F Boys Ann Arbor—p 10

Achievements in Cancer Control E I Carr Lansing—p 17

Intracranial Aneurysms F P Currier and D B Davis Grand Rapids—p 25

The Birth Control Movement Its History, Background and Development G Kamperman Detroit—p 28

Cancer Survey of Michigan F L Rector Evanston Ill—p 37

Minnesota Medicine, St Paul

19 172 (Jan) 1936

Biologic Effects of Active Thymus and Pineal Extracts Brief Review A M Hanson Faribault—p 1

Role of Iron in Treatment of Anemia W A Bloedorn Washington D C—p 5

Role of Drug Allergy in Etiology of Primary Granulocytopenia T L Squier and F W Madison Milwaukee—p 10

Laboratory Diagnosis of Various Forms of Dysentery T B Magath Rochester—p 17

Röntgenologic Manifestations of Diseases Which Have Dysentery as a Prominent Symptom H M Weber Rochester—p 23

Dysentery Its Medical Management J A Bargett Rochester—p 29

Surgical Treatment of Dysenteries C F Dixon Rochester—p 33

Reminiscences of a Range Physician C W More Eveleth—p 36

Latent Syphilis P A O'Leary Rochester—p 42

The Low Back Problem M O Henry Minneapolis—p 46

19 73 130 (Feb) 1936

Progress in Treatment of Some Diseases of Blood W P Murphy Boston—p 73

Endocrine Therapy E L Seeringhaus Madison Wis—p 78

Deep Abscess of Neck J F Barnhill Indianapolis—p 83

Importance of Radiation Therapy Institutions in Control of Cancer H Schmitz Chicago—p 88

*Development and Treatment of Cancer of Stomach W Walters Rochester—p 91

Sterility Consideration of Its Etiology and Treatment J J Swendsen St Paul—p 96

Stillbirths G A Dahl Mankato—p 100

Renal and Ureteral Lithiasis J T Priestley Rochester—p 102

Trends in Medicine S A Slater Worthington—p 106

Symptomatology of Epigastric Hernia Analysis of Two Hundred and Ninety Six Cases J de J Pemberton Rochester and F S Curry Detroit—p 109

Treatment of Cancer of Stomach—Walters says that the proper treatment for carcinoma of the stomach is surgical removal whenever possible Every patient who has cancer of the stomach regardless of how extensive should be allowed the benefit of surgical exploration of the lesion provided distant metastasis is not demonstrable In from 10 to 15 per cent of those cases in which the lesion, on roentgen examination, appears to be inoperable because of its extent, surgical removal of the lesion can be accomplished Large malignant lesions of the stomach will often be found to be of a low degree of malignancy, to be sharply demarcated and to present no involvement of lymph nodes Removal of such lesions by partial gastrectomy gives a high incidence of permanent cure and this is particularly true in elderly patients At the Mayo Clinic the finding of an extensive carcinoma, localized in the stomach, or even of one associated with involvement of lymph nodes, is viewed from the standpoint that unless the lesion is removed, the patient is doomed to early death In several cases total gastrectomy has been performed successfully at the clinic, and patients have lived and been comfortable two and three years subsequently That such an operative procedure can be carried out in suitable cases with great benefit to the patient has led to the impression that all gastric lesions should be removed unless they have invaded adjacent structures to the extent that the carcinomatous process cannot be removed in its entirety It is not an uncommon experience to find that a growth which is examined while the patient is straining under light anesthesia appears to be unremovable but under deep anesthesia may be seen to be readily removable It is not the age of the patient but his general condition that is a factor in the surgical mortality The author has found it of value to approach all extensive lesions of the stomach through a left rectus incision, as suggested by Balfour In general, a posterior Polya or an anterior Polya-Balfour type of anastomosis is the most satisfactory type of reconstruction following extensive gastric resection for malignant disease However in certain instances the original method of Billroth, in which the stomach and duodenum are anastomosed, has

worked out to advantage, although the greatest field of its applicability is in the presence of benign gastric ulcers bleeding duodenal ulcers and recurring ulcers. When extensive gastric resections have been performed on elderly patients, particularly in the case of subtotal or total gastrectomy, jejunostomy as a means of providing a temporary method of feeding has a decided advantage. During this time oral administration of fluids is restricted to assist in healing of the anastomosis. This is of particular value for patients who have lost a considerable amount of weight and who have been debilitated as a result of carcinomatous obstruction. The presence of abnormal gastric lesions from 1 to 1.5 cm in diameter can be detected by a competent roentgenologist. Many small lesions of the stomach, which appear to be benign on roentgen examination and even at the time of operation, have proved microscopically to be malignant.

Nebraska State Medical Journal, Lincoln

214 41 80 (Feb.) 1936

- Recognition and Management of Intrathoracic Coaters N F Hicken, Omaha—p 41
Heredity as Factor in Disease F Conlin Omaha—p 48
Progress of Surgery Review of Literature for the Last Half of 1935 H H Davis Omaha—p 53
Rupture of Visceral Hemangioma as Cause of Death Report of Case of Pulmonary Hemangioma W F Bowers Minneapolis—p 55
Lymphangiomatosis of Rectum M Emmert Omaha—p 57
Diagnosis and Treatment of Anemia II Hematocrit J C Sharpe Omaha—p 58
Paradoxical Embolus J M Neely Lincoln—p 61
Functional Bowel Distress S S Pinto Omaha—p 63

New England Journal of Medicine, Boston

214 144 (Jan 2) 1936

- Form of Sclerosing Osteomyelitis Following Fractures of Long Bones P P Sweet Hartford Conn—p 1
Diabetes Epidemiology from Death Records E P Joslin and H L Lombard Boston—p 7
The George W Gay Lecture on Medical Ethics The Successful Doctor and the Human Side of Practice I B Herrick Chicago—p 9
Death Rate from Alcoholism T Leary Boston—p 15
Further Experience with Fractional Phthalein Test E M Chapman Boston—p 16
The Teaching of Gynecology at the New England Medical Center L E Phineuf Boston—p 19
Elimination of Postoperative Pain Following Hemorrhoidectomy N J Simmons Boston—p 20

214 93 136 (Jan 16) 1936

- *Primary Carcinoma of Lung Early Diagnosis and Treatment by Pneumonectomy R H Overholt Boston—p 93
DeQuervain's Disease Stenosing Tendovaginitis at the Radial Stylod D C Patterson Bridgeport Conn—p 101
Antepartum Care M F Eades Boston—p 103
Treatment of Postherpetic Neuralgia C M Byrnes Baltimore—p 108
The Hinton Test III Its Clinical Value A W Cheever Boston—p 112
Treatment of Arthritis with Cold Salts R T Phillips Boston—p 114
Medical Legal and Ethical Connection by Physicians with Cases of Malpractice Which Have No Criminal Factors F W Anthony Haverhill Mass—p 115

Primary Carcinoma of Lung—Overholt points out that excision of the entire lung on one side is technically possible that the consequence of such a procedure is not incapacitating and also that a diagnosis of primary malignant condition of the lung can be made before the patient reaches the necropsy table. An analysis of the cases in his series and the experiences of others show that the large majority of all primary carcinomas of the lung originate in a major division of the right or left main bronchus. Therefore, the majority of these lesions can be actually seen early in their development and a biopsy obtained by means of the bronchoscope. Cough and hemoptysis occurred in a large proportion of all cases early in the course of the disease. This warning sign should be heeded and if no adequate explanation is forthcoming after sputum and roentgen examinations, the patient should be subjected to bronchoscopy. In the early stages of stem bronchus lesions the lesion itself does not cast a shadow on the roentgenogram. The roentgen diagnosis depends on secondary evidences of growth, namely, atelectasis. In all cases of a proved malignant manifestation exploratory thoracotomy is indicated if metastasis cannot be demonstrated. In peripheral lesions exploration is justified without a positive biopsy diagnosis. The thoracic exploration may be the only

possible way to settle the diagnosis at a time when the growth is in the operable stage. Any form of irradiation is ineffective. Five successful pneumonectomies are reported—three for malignant and two for suppurative disease.

214 137 182 (Jan 23) 1936

- Acute Arterial Obstruction from Arteritis H M Clute Boston—p 137
*Hyperglycemia and Paresis Report of Two Cases L M Blackford and J H Venable Atlanta Ga—p 140
The American Neisserian Medical Society Presidential Address J D Barney Boston—p 142
Costovertebral Strain L T Brown Boston—p 144
Two Cases of Dwarfism H L Higgins, Boston—p 148
Therapeutic Value of Calcium Salts in Serum Sickness T J Curphey Brooklyn and S Solomon New York—p 150

Hyperglycemia and Dementia Paralytica—Blackford and Venable cite two cases of hyperglycemia and dementia paralytica. They explain convulsions in relation to diabetes on the basis of an overdose of insulin. Neither patient had ever had insulin at the time of her first convulsion. Convulsions are not infrequent in dementia paralytica, and the headaches, disorientation and at times marked euphoria are, especially in view of the spinal fluid reports, pathognomonic of dementia paralytica. The authors know, therefore, in spite of the absence of necropsies, that in both cases there was extensive destruction of the brain substance. It is not unreasonable to assume that the vital basal structures were damaged. The evidence against the presence of diabetes mellitus independent of the syphilis in the first case is not conclusive. In the second case dementia paralytica seems an adequate explanation of the whole picture. The patient exhibited glycosuria only when in a convulsive state, and, in spite of excessive indulgence in sweets, she gained weight steadily until the time of her death. Her sugar tolerance curve, though high, is in keeping with that reported from time to time in cases of cerebral lesions.

Philippine Islands Med Association Journal, Manila

15 637 702 (Dec.) 1935

- Medical Service in the Philippines A S Fernando Manila—p 637
Therapeutic Value of Duodenal Intubation (Nonsurgical Biliary Drainage) in Gallbladder Diseases A Liboro Santo Tomas—p 656
Staphylococcus Bacteriophage II Sensitiveness of Staphylococci from Different Sources to Bacteriophage A Pio de Roda Manila—p 670

Southern Medical Journal, Birmingham, Ala

29 1 118 (Jan.) 1936

- Pulmonary Changes in Undulant Fever F B Bogart Chattanooga Tenn—p 1
Management of Pansinusitis W A Wagner New Orleans—p 9
Diagnosis of Heart Wounds I A Bigger Richmond Va—p 18
Dysfunctional Uterine Bleeding Catharine Macfarlane Philadelphia—p 23
Changing Gynecology and Consideration of Gynecologic Errors E Dunlap Dallas Texas—p 27
Seasonal Occurrence of Various Obstetric Complications and Abnormalities R Paddock St Louis—p 31
Clinical Study of Vitamin C Excretion M Corlette J B Youmans J Akeroyd and Helen Frank Nashville Tenn—p 37
Conservative Use of Anesthetics Agents and Methods J S Lundy Rochester, Minn—p 42
Well Leg Traction as an Aid in Correction of Some Stereotyped Orthopedic Deformities J W White Greenville S C—p 45
Some Physiologic Aspects of Treatment of Peritonitis T G Orr, Kansas City Kan—p 49
Postoperative Treatment A Ochsner New Orleans—p 53
Chronic Lung Disease J A Miller New York—p 57
Cancer of Kidney Report of Cases B W Turner Houston Texas—p 63
Cancer of Genito Urinary Tract C E Burford St Louis—p 65
*Evaluation of Serodiagnostic Test for Syphilis F E Seneac Chicago H S Cumming H H Hazen Washington D C A H Sanford Rochester Minn W M Simpson Dayton Ohio and R A Vonderlehr Washington D C—p 68
Treatment of Neurosyphilis W F Lorenz Madison Wis—p 74
Congenital Malformation Study of More Than Five Hundred Families Each Having at Least One Congenitally Malformed Child D P Murphy Philadelphia—p 79
The Emotional Factor in Disease J S McLester Birmingham Ala—p 81
A New Era in Public Health W K Sharp Jr New Orleans—p 83
Spontaneous Recovery from Pneumococcus Meningitis Report of Case in a New Born Infant S T Ravenel, Greensboro N C—p 86

Evaluation of Serodiagnostic Test for Syphilis—Seneac and his associates declare that the plan in their study differed from that of the conference of the League of Nations in that the serums were sent to each of the thirteen participants who

were able to test them in their own laboratory, in most instances probably along with their routine serologic work. In other respects the procedure followed in the main that of the League of Nations conferences. Four participants performed complement fixation tests and nine performed flocculation tests. A total of 1,017 blood specimens and 220 spinal fluid specimens was furnished to each participant. The specimens were collected in various parts of the country and, depending on the distance that they were to travel, were sent by ordinary special delivery or by special delivery air mail. The average in sensitivity of the nine flocculation tests was 80.3 per cent, and that of the complement fixation methods 75.1 per cent. The previously published conclusions of the committee are reviewed in part in order to emphasize again their conception of the present situation in the serodiagnosis of syphilis.

Southwestern Medicine, Phoenix, Ariz

20 138 (Jan) 1936

- Hay Fever and Other Allergic Conditions R W Lamson Los Angeles —p 1
Acute Yellow Atrophy of Liver Case Report Autopsy W L Brown C P Brown and J L Murphy El Paso Texas —p 4
Acute Suppurative Appendicitis Report of Two Hundred and Six Consecutive Cases J D Lamson Jr Albuquerque N M —p 5
Premalignant and Malignant Skin Lesions with Especial Reference to Their Treatment by Endothermic Methods L M Smith El Paso Texas —p 7
Alcoholic Pellagra Case Report M Spearman and L M Smith El Paso Texas —p 9
Control of Food Allergens Is Extremely Difficult O H Brown Phoenix Ariz —p 10
Treatment Methods of Breast Carcinoma D von Briesen El Paso Texas —p 12
The Larger Aspects of the Problems of Heart Disease C T Stone Galveston Texas —p 13
Studies on Nature of Phagocytosis Z M Flinn Prescott Ariz —p 15

Surgery, Gynecology and Obstetrics, Chicago

62 129 256 (Feb 1) 1936

- *Relation of Chronic Mastitis to Certain Hormones of Ovary and Pituitary and to Coincident Gynecologic Lesions Part I Theoretical Considerations and Histologic Studies H C Taylor Jr New York —p 129
*Influence of Pepsin and Hydrochloric Acid on Healing of Gastric Defects Artificial Gastric Ulcer E L Howes C A Flood and C R Mullins New York —p 149
A Review Clinical and Pathologic of Parahypophyseal Lesions C H Frazier Philadelphia —p 158
Regeneration of Semilunar Cartilage D King San Francisco —p 167
*Amniotic Fluid Concentrate as an Activator of Peritoneal Immunity H L Johnson G K Coonse, J B Hazard P S Fosse and O Aufranc Boston —p 171
Repair of Postoperative Defects Involving Lips and Cheeks Secondary to Removal of Malignant Tumors G B New and F A Figg Rochester Minn —p 182
Conditions Necessitating Surgery Following Cholecystectomy Analysis of Sixty Six Cases and Discussion of Certain Technical Problems Concerned in Removal of Gallbladder and in Operations on Common Bile Duct H L Beye Iowa City —p 191
Surgical Indications for Peptic Ulcer and Its Surgical Management M E Blahd Cleveland —p 203
Preoperative Iodine Therapy in Hyperthyroidism E E Blanch Chicago —p 213
Duodenal Ulcer Surgical Treatment F G Connell Oshkosh Wis —p 216
Orthopedic Considerations in Treatment of Spina Bifida R S Smith St Louis —p 218
Extra Uterine Pregnancy Analysis of Three Hundred and Thirteen Cases from Harlem Hospital H C Falk and M A Rosenbloom New York —p 228
Improved Anesthetic Technic for General Surgery W A Fraser and J T Gwathmey New York —p 236
Experiences with Latzko Cesarean Section A J Fleischer and J I Kushner Bronx N Y —p 238

Chronic Mastitis and Coincident Gynecologic Lesions

—According to Taylor, the difference of opinion expressed by various observers and the easily found exceptions to the Rosenberg conception indicate that the cycle of a general premenstrual epithelial proliferation and postmenstrual regression has probably been exaggerated. A premenstrual hyperemia of the breast is, however, obvious from the gross changes in the size and the weight of the breast and the deepening of the color of the areola. Microscopic evidence of this vascular change is found in the greater definition of the lobule and in the alteration of the character of the intralobular connective tissue. The painful breast in its simplest form exhibits an increase in these premenstrual vascular changes. To refer the abnormal premenstrual swelling of the breast to excessive epithelial

proliferation or the pain to the distention of the ducts with desquamated cells is contrary to many histologic observations. The tissue in the milder forms of the painful breast may therefore appear almost normal under the microscope or may show excessive "edema" of the intralobular connective tissue. In the cases presenting pain and marked nodularity there may be evidence also of irregular fibrous tissue and epithelial proliferation. The histology of the painful hypertrophies of this series was in general similar to that of the painful, nodular breast. The histology of the breast with discharge from the nipple is variable and includes duct dilatation, stasis and catarrhal inflammation, frequently with secretion and hyperplasia of the epithelium and fibrosis and round cell infiltration of the connective tissue.

Healing of Gastric Defects—Howes and his co-workers administered excessive amounts of pepsin and hydrochloric acid to cats with mucosal defects in the stomach and observed the rate and character of healing. The results are compared with the healing of similar defects in a group of animals receiving equal amounts of hydrochloric acid without pepsin and with controls receiving neither acid nor pepsin. The concentration of hydrochloric acid given to the majority of the cats ranged between hydrogen ion concentration 1 and 14. The failure of these experiments to produce chronic ulcers does not invalidate the clinical concept of the causal relationship between gastric juice and the chronicity of ulcer, for the defense mechanisms against the action of potent gastric juice were relatively undisturbed. The gastric juice of the patient with chronic peptic ulcer has no more capacity to cause an acute mucosal ulceration to become chronic than does artificial gastric juice. In general the stomach, even when injured, has the ability to cope with destructive digestive juices remaining in the lumen for long periods of time, provided the defense mechanisms are not too disturbed.

Amniotic Fluid Concentrate and Peritoneal Immunity

—From the experimental and clinical evidence on which Johnson and his associates base their paper, they state that they have definitely proved that amniotic fluid concentrate most effectively meets the requirements to establish peritoneal immunity against infection and adhesions. The only other substance now being employed to any extent as an activator of peritoneal immunity is the bacterial vaccine of Rankin and Bagen with modifications by Steinberg and Goldblatt. Extensive clinical trial and laboratory experiments have proved this agent effective. However, its use is confined to preoperative administration, from forty-eight to seventy-two hours before the abdomen is opened, and the protection afforded by its introduction is attained at the cost of a considerable physiologic and clinical upset and a long immunizing interval. In the authors' experimental work, at least, the product itself has not proved stable. Other substances such as physiologic solution of sodium chloride, papan and sodium ricinoleate, were studied as controls and for the purpose of learning their beneficial or destructive qualities in the infected and uninfected animals. The brief immunization interval required in the use of amniotic fluid concentrate makes it adaptable for operative as well as preoperative introduction.

United States Naval Med Bulletin, Washington, D C

34 1148 (Jan) 1936

- Identity of Lymphogranuloma Inguinale and Climatic Bubo L E Gilje —p 1
Fret Test in Lymphogranuloma Inguinale and Other Types of Inguinal Adenitis C B Galloway —p 12
Epidemic of Bacillary Dysentery A A Shadday —p 16
A Thousand Applicants H D Templeton —p 22
Neuropsychiatric Service U S S Relief Analysis of One Year's Work F L McDaniel —p 27
Prophylaxis of Venereal Disease J A Millsbaugh —p 32
Influence of Increased Barometric Pressure on Pulse Rate and Arterial Blood Pressure C W Shilling J A Hawkins and R A Hansen with technical assistance of I A Everley —p 39
Hazard of Caisson Disease in Individual Submarine Escape C W Shilling and J A Hawkins —p 47
Review of Relation Between Sinusitis and Pulmonary Disease T Harbert —p 52
The Civilian Doctor's Part in a National Military Emergency H A Monat —p 64
Allergy Autointoxication and Indicanuria J R Sayers —p 67
Camphorated Oil in Treatment of Minor Industrial Wounds D N McInturff Jr —p 70

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Journal of Mental Science, London

S1 755 1030 (Oct.) 1935

- Four Decades of Psychiatry R. Worth—p. 755
 Clinical Significance of Social Maturity E. A. Doll—p. 766
 Modern Endocrinology and Mental Disorder T. D. Power—p. 783
 Some Clinical Aspects of General Paralysis W. D. Nicol and E. L. Hutton—p. 804
 Unfitness to Plead W. D. Higson—p. 822
 Chorea, Tics and Compulsive Utterances Mildred Creak and E. Guttman—p. 834
 Some Recent Investigations into the Hematology of the Psychoses H. C. Beccle—p. 840
 Value of Rorschach Test A. Guirrdham—p. 848
 The Rorschach Test in Epileptics A. Guirrdham—p. 870

Lancet, London

2 1393 1448 (Dec. 21) 1935

- Care and Treatment of Difficult Children R. Miller—p. 1393
 Macrocytic Hemolytic Anemia Report of Case J. L. Lovibond—p. 1395
 Diagnosis of Vitamin C Subnutrition by Urine Analysis Quantitative Data—Experiments on Control Subjects M. A. Abbas, L. J. Harris, S. N. Ray and J. R. Marrack—p. 1399
 *Adult Scurvy Case P. Wood—p. 1405
 Significance of Lateral Aberrant Thyroids A. L. d'Abreu—p. 1406

Scurvy—Wood reports a case illustrating that scurvy still occurs in adults. In this instance a dyspeptic diet was the cause of the vitamin deficiency. The case bears out the contentions of Harris and Ray that the cevitamic acid urinary excretion test is a valuable aid in the diagnosis of scurvy. The patient received more than 1,000 mg. of cevitamic acid and excreted only 17 mg., and that was after the test dose of 600 mg. A normal control, after a test dose of 600 mg., excreted 231 mg. There can be little doubt that both children and adults store vitamin C in the tissues, for Harris and Ray have shown that the excretion of cevitamic acid continues at an even rate for many days after complete elimination of the vitamin from the diet, and there is no evidence that human beings can synthesize it. That 1,000 mg. of cevitamic acid was almost completely retained in the body of this patient suggests that her stores were very low. The anemia of scurvy is of interest. In this patient the anemia was moderate and appeared to be orthochromic and normocytic. It was not possible to estimate the reticulocyte response owing to the patient's objections. The bleeding time was prolonged and the blood platelets were normal.

Medical Journal of Australia, Sydney

2 769 800 (Dec. 7) 1935

- Obesity Etiology and Metabolism C. G. Lambie—p. 769
 Some Anatomic Considerations of Autonomic Nervous System A. N. Burkitt—p. 781
 Some Physiologic Considerations of Autonomic Nervous System G. Phillips—p. 782
 Volumetric Microdetermination of Spermine in Semen A. Bolliger—p. 784

2 801 832 (Dec. 14) 1935

- E. H. Embley Memorial Lecture Z. Mennell—p. 801
 *Management of Head Injuries R. A. Money—p. 810

Management of Head Injuries—Money considers the following pathologic conditions as being covered by the term head injury: (1) wounds and contusions of the scalp; (2) fractures of the skull and their complications; (3) meningeal and vascular injuries, leading to the various types of intracranial hemorrhage—epidural, subdural, subarachnoid and intracerebral; (4) contusions and lacerations of the brain, with edema and/or hemorrhage leading to the clinical states of traumatic stupor and traumatic delirium (that is, concussion, irritation and compression of the brain), and (5) after-effects of any of the foregoing, including mental deterioration, traumatic neurosis and fits. A consideration of any large series of head injuries on the basis of traumatic stupor will enable them to be placed in three categories according to their condition on admission to the hospital. The first group consists of patients who are deeply unconscious or comatose. These comprise

chiefly cases of injury to the base of the skull with rapid and extensive subarachnoid hemorrhages and hemorrhages from the dural sinuses. The patient's condition becomes progressively worse, whatever is done, and death occurs within the first twenty-four hours and usually within the first eight hours. In the second group patients are of two main types: 1. Patients who have regained or are already regaining consciousness but are dazed and restless, with immediate retrograde amnesia. Provided a progressive return of the faculties proceeds, the prognosis is good, whatever the injury. 2. Patients who were primarily unconscious but have recovered and relapsed into a secondary unconsciousness or stupor. Unless careful observations have been made on admission or shortly afterward, it may be difficult to estimate the length of the lucid interval, the depth of this secondary stupor (the crucial point) and the existence of localizing signs. The classic cases of extradural and massive subdural hemorrhage fall into this group, and for them active operative intervention (subtemporal craniectomy, often bilateral) is essential. If the stupor is relatively light and no paralysis is observed, only edema may be present, and recovery will occur spontaneously or by the aid of dehydration methods without major operation. The third group consists of patients who are stuporous or lightly unconscious on admission and who remain uncooperative and unresponsive for hours, days or weeks. Despite this lack of cooperation, many useful observations and examinations can be made. The condition of the patients, thus revealed, is a gradual and progressive one toward recovery, anxiety will be relieved, and there is no need for major surgical intervention. These are usually cases of severe contusions and lacerations. The early adoption of the upright posture in a special bed is advocated, and the use of bromides and the barbiturates for restlessness in preference to morphine is urged. A routine is set out for the prevention and control of hyperthermia. The indications for lumbar puncture, both diagnostic and therapeutic, and the administration of hypertonic solutions are stated. The routine use of a simple spinal glass manometer to determine accurately the intracranial tension before deciding on active therapeutic measures is advised. The indications for and technique of operations for scalp wounds and fractures are considered in detail. The repair of defects in the cranial vault by bone grafts from the ilium is advocated. Failure of compensation and the onset of compression call for operation. Subtemporal decompression is usually sufficient to enable evacuation of the clot. Early evacuation of localized intracerebral hemorrhage to prevent the onset of fits is advocated.

Chinese Medical Journal, Peiping

49 1183 1280 (Nov.) 1935

- Present Status of Knowledge of Mosquitoes of China and Their Relation to Human Diseases L. C. Feng—p. 1183
 Use of Higher Barbiturates in General Practice Report on Sixty Six Cases H. T. Burkwill—p. 1209
 *Systemic Salmonella Infections in Man Clinical and Bacteriologic Study C. J. Wu and S. H. Zia—p. 1217

Systemic Salmonella Infections—Wu and Zia state that in the last fourteen years 691 cases of typhoid paratyphoid group fevers have been admitted to the Peiping Union Medical College Hospital, their relative incidence being typhoid 84.1 per cent, paratyphoid A 9.4 per cent, paratyphoid B 3.2 per cent, and paratyphoid C 3.3 per cent. The clinical symptoms of the systemic Salmonella infections are indeed variable and almost identical, no matter which organism is the underlying cause. Many even simulate moderately severe cases of Bacillus typhosus infection. Eleven of the eighteen cases of Bacillus paratyphosus Corynebacterium suispestifer infections occurred in the last two years. The comparative scarcity of the natural Bacillus paratyphosus B infection in Peiping leads the authors to wonder whether it is wise to continue to include this organism in the preparation of vaccine for prophylaxis against enteric infections. The United States Army vaccine now does not contain Bacillus paratyphosus B, because it has been found to be no longer necessary. If studies in other parts of the country confirm this relative low incidence, it may be time to leave out Bacillus paratyphosus B in the preparation of vaccine, which would incidentally reduce much of the severe reaction now resulting from its use.

Presse Medicale, Paris

13 2049 2064 (Dec 18) 1935

- *Malaria and Henry Reaction E Marchoux and V Chorine—p 2049
Besides Sensitization Parakeritosis Dermatoses Is There not Psoriasis
Caused by Ultravirus? A Desvux and H Pretet—p 2050
Skin Grafting M Grunz—p 2053
Morbid Determinism of Dolichocolon J Tauzin—p 2055

Malaria and Henry Reaction—There are according to Marchoux and Chorine, only two ways of diagnosing malaria. The parasite must be discovered in the blood or its pigment must be found. For the determination of the latter the Henry reaction is especially interesting though it does not have the specificity originally credited to it. It rests solely according to most investigators, on a change in the serum. The change consists especially in an increase in the coefficient of euglobulins precipitable by distilled water. This serum disequilibrium is constant in malaria but is not confined to it. A positive result gives an erroneous diagnosis of malaria in from 5 to 7 per cent, but a negative reaction is false in less than 1 per cent. The reaction is, however, inhibited at the time when the microscope shows the parasites in the blood. Certain technical factors are important. Thus blood for the test should not be taken at the time the parasites appear in the blood and it should be taken from the fasting person. It is important to test the blood soon after removal, as the time factor is important. Finally the distilled water method gives the most certain results. Of 335 patients examined the reaction was negative in 253, positive in sixty-two and doubtful in twenty. In patients who had acquired malaria in the colonies the reaction was positive in from 35 to 40 per cent during the first six months of their return and fell almost to zero after two years. The authors feel that this reaction may confirm other evidence that malaria apparently cured is so in actual fact.

Minerva Medica, Turin

1 81 104 (Jan 28) 1936

- *Artificial Pneumomediastinum Anatomic Investigations and Technique of Injections into Anterior and Posterior Mediastinal Cavities I Condorelli—p 81
Time of Circulation and Venous Pressure G Ferrari and F Ferroni—p 87
Therapeutic Action of Antithyroid Serum in Hyperthyroidism and Exophthalmic Goiter T Galli—p 91
Sexual Functions and Tuberculosis A Campani—p 92

Artificial Pneumomediastinum—Condorelli uses air injected into the mediastinum, as a contrast medium for roentgen visualization of the mediastinal structures. The punctures are made as follows. The patient is put in the dorsal position without any pillow, having his neck in extension. If the air is going to be injected in the anterior mediastinal cavity the central point of the suprasternal fossa is compressed by the surgeon with the index finger of the left hand and a needle 10 cm long and bent at an angle of 120 degrees 4 cm from its point is introduced to a depth of from 2.5 to 3.5 cm and then inclined so that the point of the needle follows the posterior aspect of the manubrium sterni, which is the anterior boundary of the cavity. Aspiration through the needle, temporarily connected to a sterile syringe, is performed to avoid insufflation into a blood vessel. The pain caused by the puncture is slight and no accidents follow. If the air is to be injected into the posterior mediastinal cavity, the needle is introduced at the center of the middle line of the neck, at a point two finger-breadths above the fossa suprasternalis, as if for a tracheal puncture. When the point of the needle reaches the anterior wall of the trachea, the needle is inclined downward, tangentially to the trachea to a point 2 cm below the suprasternal fossa. At this point the air insufflation can be performed. As a preliminary work for the establishment of the aforementioned technique the author made injections of two different colored liquids into the mediastinum of cadavers and found that there is an anatomic septum separating the mediastinal anterior and posterior cavities, which is formed by the deep layers of the middle cervical fascia and the posterior aspect of the pericardium, in front and by the mediastinal pleurae at the sides. The author verified the boundaries of the mediastinal cavities and the routes through which the colored liquids disseminate themselves after the injection. His verifications clarify the significance of the roentgen shadows of the mediastinal structures in

artificial pneumomediastinum and the mechanism of expansion of the air injected. The author calls attention to the importance of artificial pneumomediastinum in the roentgen examination of the mediastinum for the diagnosis of pleuromediastinal diseases.

Policlinico, Rome

43 148 (Jan 15) 1936 Surgical Section

- Effect of Hypophyseal Hormone Preparations on Testicles of Guinea Pigs G Lucchese—p 1
*Spherical Calcium Concretions and 'Corpora Amylacea' in Epididymis A Marsella—p 12
Raynaud's Disease Recurrence After Sympathectomy Cases P Valdout—p 32

Spherical Calcium Concretions and "Corpora Amylacea" in Epididymis—Marsella found spherical bodies, equal to those that have been described in other organs under the name of amyloid bodies, in the efferent ducts of the head of the epididymis. In his case the larger part of the bodies were calcified. The author says that, because amyloid bodies have no specific characteristics of identification and their structure varies in different organs, in the same organ and even in the same section, it is advisable to distinguish as "spherical calcium concretions" the formations in which calcium predominates and as "amyloid bodies" those that have a concentric lamellar structure and do not have histochemical reactions to calcium. Spherical calcium concretions in the epididymis may originate in the detachment and homogenization of epididymal cells, especially epithelial cells, in amyloid bodies and in precalcified and other small accumulations of inorganic substances, independent of any cellular origin, which form the primary nuclei for the aggregation of the body. Epididymal concretions and amyloid bodies are found free in the lumen of the epididymal ducts, while those previously described in the testicle have been found to be in contact with the walls of the testicular tubuli, circumscribed by epithelial or other cells, or as migratory bodies in the interstitial connective tissues. The necessary conditions for the production of the formations are not only the detachment and degeneration of the epithelial cells and the modifications of the epididymal fluid, such as coagulation and stasis of the fluid in the tubuli but also, and especially, the lability of the epithelial cells and the rupture of the equilibrium of the colloids and of the calcium metabolism. The coincidence of these conditions explains the formation of the concretions in the epididymis on the one hand and its origin in alterations independent of the detachment of epithelial cells on the other. The appearance of both spherical calcium concretions and corpora amylacea is related neither to certain diseases nor to the age of the patient in whom they appear.

Prensa Medica Argentina, Buenos Aires

23 155 226 (Jan 15) 1936

- Surgical Treatment of Cardiospasm Heller and Heyrovsky's Operations J Diez—p 155
Fractures of Scapula M C Rodriguez and V F Ardenghi—p 175
*Cranio-Encephalic Topography New Method V Bertola—p 181
Bernheim's Syndrome Frequency C F Carrega Casaffousth and J Suberviola—p 193
Rechloridization of Patients After Operations R S Ferracani—p 201
Hydatid Cyst of Muscles of Nucha Case N Quirno—p 213

Cranio-Encephalic Topography—Bertola describes a new method of cranio-encephalic topography to mark on the head the position of the cerebral fissures. The technique is as follows. A sagittal line is drawn from the subnasal point to theinion. The central point of this line is marked, the line being divided into an anterior and a posterior portion. The posterior portion is divided into three equal parts, which turn out to be the rolandic, sylvian and mial points. A line is then drawn from each of these three points to the retro orbital tubercle, which is located at the center of the posterior edge of the external orbital process. The three lines result in the rolandic, sylvian and temporosinusual lines. The fissure of Rolando corresponds to the upper two thirds of the rolandic line. The sylvian fissure corresponds to the inferior two thirds of the sylvian line, beginning at the point of intersection of this line with a perpendicular line drawn from the center of the zygomatic arch. At the point of intersection of these two lines the anterior branch of the middle meningeal artery is found. The transverse (horizontal) portion of the transverse sinus corresponds to the posterior third of the temporosinusual line. The middle

branch of the middle meningeal artery is found at the point of union between the inferior third and middle third of the rolandic line. The course of the posterior branch of the middle meningeal artery corresponds to a line that bisects the angle formed by the sylvian and temporo-sinusal lines. The correspondence between the cerebral fissures and the cranial lines, on the one hand, and between the course of the three branches of the middle meningeal artery and the cranial points of reference, on the other, according to the method of the author, is exact. The author, in carrying out his verifications used one half of the head for performance of his own method and the other half for either Kronlein's or Chipault's methods. His topographic marks agree with those of Kronlein's method, not with those of Chipault's. His method, however, is different from both Kronlein's and Chipault's. The author concludes by saying that his method can be applied to heads of any cephalic index. The cephalic indexes ranged between 69.23 and 88.96. His method is the first in which the course of the three branches of the middle meningeal artery is topographically marked. It is proportional, but of easy technique and application.

Beitrage zur klinischen Chirurgie, Berlin

163 1176 (Jan 18) 1936 Partial Index

- *Plastic Operations for Hydronephrosis F. Schaffhauser —p 1
- Role of Meckel's Diverticulum in Ileus E. Mester —p 34
- Torsion of Abdominal Testicle L. Josa —p 45
- *Changes in Duodenal Ulcer and Twin (Kissing) Ulcers E. Ruckenstein —p 51
- Qualitative and Quantitative Changes in Agglutinins of Human Blood in Disease and After Surgical Operations Method of Estimation W. Albertsen —p 78
- Reconstruction of Nose Shrunken by Tuberculous Process E. Eichhoff —p 107

Plastic Operations for Hydronephrosis—According to Schaffhauser, the experience with the cases of hydronephrosis in which treatment was given at Clairmont's clinic (Zurich) suggests the advisability of a wider application of conservative plastic surgical intervention than has been practiced heretofore. Little difficulty is experienced in deciding on the type of operation in the cases of completely destroyed kidney represented by a mere sac. It is in cases of hydronephrosis of average size that diversity of opinions exists. There are no definite indications here, every case requiring careful consideration of a number of factors, which frequently become apparent only after free exposure of the kidney. Infected hydronephroses limit but do not exclude indications for plastic conservative surgical intervention. The role of mechanical factors in the pathogenesis of hydronephrosis is as a rule underestimated and the possibilities of restoring renal function after the removal of the mechanical cause not fully appreciated. The author believes that with more frequent recourse to conservative plastic operations it will be possible to save more functioning kidneys than has been the case in the past.

Alterations in Duodenal Ulceration—On the basis of 200 roentgenologically investigated cases, 169 of which were controlled by operative intervention, Ruckenstein concludes that twin ulcers occur in the upper portion of the duodenum with considerable regularity. Because of the tendency to heal, the association of an ulcer with a scar is not unusual. The localization of duodenal ulcers is confined to definite areas in the intestinal wall with a corresponding deformity of the duodenal bulb. Consideration of the latter suggests the possible location of the ulceration. The author believes that the large single ulcer is frequently the result of coalescence of two ulcers.

Deutsche medizinische Wochenschrift, Leipzig

62 129 168 (Jan 24) 1936 Partial Index

- *Clinical Contributions to Problems of Pathologic Pigmentations of Skin F. Hoff —p 129
- Tuberculosis of Female Genitalia P. Caffier —p 134
- Treatment of Bronchial Disturbances by Inhalation of Anast. Steinhäuser —p 136
- *Diagnostic Value of Intracutaneous Trichophytin Reaction W. Kmerer —p 138
- Time Relations Between Cardiac Action and Electrocardiogram W. Knoll, L. Girones and W. Goerke —p 140

Pathologic Pigmentations and Their Treatment—Hoff shows that many pathologic pigmentations of the skin are connected with a deficiency of vitamin C and can be counteracted

by the administration of this substance. Vitamin C deficiency may be caused by exogenic factors, namely, by deficient vitamin C content of the diet. In this connection the author mentions scurvy, in which severe pigmentations are often noted on portions of the body that are exposed to light. These pigmentations subside together with the other symptoms following the administration of sufficient quantities of vitamin C. The author points out that the physiologic pigmentation of the skin (produced by sunlight or quartz lamp) is likewise reduced by vitamin C. Vitamin deficiency may result also from a deficient resorption of vitamin C. The author thinks that pathologic pigmentations in the course of achylia gastrica (carcinoma of the stomach and pernicious anemia), in pancreatic disturbances and in chronic gastro-intestinal disturbances may perhaps be explained in this manner. Vitamin C deficiency may also be of endogenic origin, as, for instance, in case of destruction of the adrenals (Addison's disease). However, even the pathologic pigmentations that can be traced to none of these factors occasionally yield to the administration of vitamin C. The author cites a case of generalized scleroderma with symptoms of Addison's disease in which abnormal pigmentations were improved by vitamin C. The symptoms of scleroderma improved considerably in response to the combined administration of vitamin C, adrenal cortex extract and an extract of the anterior hypophysis. The relations of the abnormal pigmentation with other secretory glands and with the sympathetic nervous system are discussed.

Diagnostic Value of Trichophytin Reaction—Kmerer says that the intracutaneous trichophytin test is estimated differently by various authors. Opinions differ on the optimal degree of dilution of trichophytin, the interpretation of the skin reaction, the time required for the final evaluation and the diagnostic value. Because of this lack of agreement on the test, the author decided to study it on persons with various skin disorders and on persons without cutaneous disturbances. He tested 115 persons varying in age between 7 and 70 years. He used trichophytin dilutions of 1:200, 1:100, 1:50 and 1:10. In the final evaluation he considered the reactions that had been produced with the 1:50 dilution after a period of thirty-six hours. He gives tabular reports of the results of his tests and reaches the conclusion that, provided the test is employed with due criticism, it has some diagnostic value. However, it cannot be the only criterion in the differentiation between mycotic and nonmycotic disorders, for the test is positive in from 10 to 35 per cent of persons who are free from mycotic disorders, and it is negative in from 25 to 45 per cent of the patients who have a mycosis.

Wiener klinische Wochenschrift, Vienna

49 65 96 (Jan 17) 1936 Partial Index

- Theoretical Foundations of Treatment of Diabetes W. Falta —p 65
- Epilepsy as Problem and Its Relation to Therapy O. Marburg —p 69
- Demonstration of Tubercle Bacilli in Blood N. Kovacs —p 72
- *Schröder's Cancer Hair and Its Significance for Diagnosis of Carcinoma G. Frick and K. Meduna —p 76
- Prophylactic Use of Injectable Liver Extract M. Landsberg —p 77
- Problem of Hypertension in Circulatory Organs J. Fal —p 78

Diagnostic Significance of Schröder's Cancer Hair—Frick and Meduna point out that, although the cancer reactions have been given considerable attention in recent years, some of the secondary signs and symptoms have been largely disregarded. In this connection they call attention to Strumpell's observation that patients with cancer, particularly those with gastric carcinoma even if they are of a rather advanced age, rarely have gray or white hair. Other observers have noted frequently a rather youthful appearance in patients with incipient carcinoma. Schröder studied the hair growth of patients with cancer and found that carcinoma patients have a smaller or larger number of deep black coarse and dull hairs on the parts of the head that are exposed to light particularly the temples. The diagnostic significance of this sign was denied by the majority of clinicians. The differences in the evaluation of Schröder's cancer hair induced the authors to investigate this sign in 300 patients of the department for internal diseases (a considerable proportion of whom had cancer) and in some healthy persons. They searched for Schröder's cancer hair at the frontal and temporal hair margins and also at the nape of the neck and found it in approximately 25 per cent of their

patients In comparing the relationship between the occurrence of the cancer hair and diagnosis of carcinoma they found that the described anomaly of hair growth was missing in none of the patients with cancer It was observed chiefly on the frontal and temporal hair margins, but occasionally (mostly in men) at the nape of the neck In a number of the cancer cases, the members of the family (siblings, children and grandchildren) were also examined and it was found that the anomaly of hair growth was present in a large number, occasionally even in rather young persons The authors conclude that the absence of Schridde's cancer hair seems to be a sign for the absence of cancer or of a carcinomatous predisposition however the presence of this hair is no proof for the existence of a malignant tumor but the probability of the development of a cancer seems to be greater in the persons who have this hair than in those who do not have it They think that the demonstration of Schridde's cancer hair is of about the same value for the determination of a carcinomatous predisposition as is the knowledge of cases of cancer in the ancestry In view of the fact that correct family anamnesis is difficult to obtain, an objective sign, such as cancer hair, is of considerable importance

Zeitschrift fur Tuberkulose, Leipzig

74 241 320 (Jan.) 1936 Partial Index

Further Investigations on Efficiency of Roentgenoscopy and Roentgenography of Lungs U Schaare—p 241

*Experiences with Segregation of Patients with Open Incurable Tuberculosis Hanke—p 248

Comparative Investigations on Dold's Urea Method for Demonstrating Tubercle Bacilli and on Antiformin Method of Uhlenhuth Nylander Lotte Homann—p 259

*Occurrence of Bovine Tubercle Bacilli in Human Tuberculosis E Groh—p 263

Training and Further Education of Young Persons in Sanatoriums for Tuberculous Patients H Brugger—p 271

Segregation of Patients with Open Incurable Tuberculosis—Hanke advises the segregation of patients with open incurable tuberculosis in special institutes, in the interest of public welfare He points out that it is the purpose and aim of the segregation of these patients to remove these disseminators of bacilli from healthy persons and thereby prevent the further spreading of tuberculosis He relates his experiences in an asylum, in which fifty patients with open tuberculosis were taken care of He considers suitable for residence in such an institute the patients who had a cirrhotic productive form of tuberculosis are free from fever and are not bedridden Patients with the exudative forms and with constant fever, however, should remain under hospital care Among the patients who were admitted to the author's institute for segregation, he found some who were not incurable but quite amenable to surgical treatment Some of these patients refused to submit to such treatment, but the author points out that it should be impressed on them that they have obligations toward their families as well as toward the public, that is, toward those who have to bear the burden of their support This responsibility toward their family and the public, whom they expose to the danger of infection, should be impressed also on patients with open tuberculosis who have been segregated for some time but who then demand to be discharged in order to return to their families The author thinks that, in order to overcome the resistance of some of these patients, it might become necessary for the state to intervene by means of a law for the compulsory segregation of patients with open incurable tuberculosis

Occurrence of Bovine Bacilli in Human Tuberculosis—Groh describes his studies on thirty-seven patients with pulmonary tuberculosis, forty-eight with renal tuberculosis, five with testiprotatic tuberculosis, thirty-one with tuberculosis of bones and joints and some with other forms of tuberculosis the total number being 149 He points out that in previous studies on the development of human tubercle bacilli he had found that in the majority the strains contained also those that he had seen in cultures obtained from tuberculous organs of cattle This observation induced him to make further studies Among his 149 cases he found only one in which bovine bacilli were not detectable but in all of the remaining 148 cases he found the human as well as the bovine type of tubercle bacilli He demonstrated this by microscopic studies as well as by the culture method The relative quantity of the human and bovine bacilli differed in the various cases In some there were many

that is, they were present in excess of the human type, in others the human and bovine types were present in about equal numbers, while in still others the bovine type was present in only small numbers In some cases the presence of bovine bacilli was corroborated by animal experiments The frequent concurrence of the bovine and human types of tubercle bacilli suggested to the author the possibility of a mutation of human into bovine forms or vice versa He gave attention to this problem in his investigations but was unable to find corroborating evidence for a mutation

Zentralblatt fur Gynakologie, Leipzig

60 193 256 (Jan 25) 1936

*Operations for Urinary Fistulas and for Urinary Incontinence H Martius—p 194

Plastic Use of Ischioavernosus Muscle According to Martius in Treatment of Incontinence A Stempel—p 205

Use of Flap Method in Repairing Vesical Fistulas in Vaginal Vault A Mandelstamm—p 208

Cervicovesical Fistula Operated on According to O Kustner with Four Subsequent Spontaneous Deliveries A Stempel—p 211

*Rare Forms of Micturition Disturbances in Women (Sclerosis of Sphincter Urethral Stenosis) H Friedrich—p 212

Ascites in Nephropathia of Pregnancy E Junghans—p 217

Operations for Urinary Fistulas and Incontinence—Martius points out that recent studies on the closing mechanism of the bladder have shown that this mechanism is somewhat different from what has been hitherto believed Careful studies on the floor of the bladder, proceeding from the inside out, disclosed muscle fibers arranged in loops, the sides of the loop pass along the anterior wall of the bladder and the curve passes posteriorly around the vesical orifice After these fibers have been removed, a loop of muscle fibers running in the opposite direction becomes visible The latter muscular loop was the only one that was formerly recognized, it was designated as sphincter trigonalis or sphincter urethrotrigonalis The muscular loop mentioned first had been overlooked by the earlier students The author gives a schematic diagram of the two muscular loops (lissosphincter loops), which together form the internal vesical sphincter, and shows that the involuntary closure of the female bladder is accomplished by the movement of the two muscular loops in opposite directions (pinchcock mechanism) He shows the importance of these lissosphincter loops in operations for the repair of injuries on the neck of the bladder and of congenital incontinence He demonstrates that repair of the lissosphincter loop and the simultaneous grasping of the perivesical supporting tissue (the procedure designated by Stoeckel as the "direct muscle plastic") must be the foundation of all operations for urinary incontinence and should never be neglected The author indicates in a diagram all tissues that may serve as repair material in the correction of vesical fistulas and of urinary incontinence, namely, (1) the vesical wall with lissosphincter, (2) the perivesical supporting tissue with the smooth musculature, (3) the urogenital diaphragm with rhabdosphincter, (4) the levator ani muscle, (5) the bulbocavernosus flap, (6) the corpus or cervix uteri and (7) the rectus sheath with the pyramidal muscles The author says that he himself generally utilizes the bulbocavernosus flap and he describes how this is done

Rare Forms of Micturition Disturbances in Women

The first case reported by Friedrich concerns a woman, aged 56 The difficulties with her bladder began seven years before At first she had symptoms indicating cystitis There were terminal pains at micturition, the urine was turbid and the last drops were often bloody For the last several years it became constantly more difficult to void the bladder, and finally spontaneous evacuation was impossible so that catheterization had to be resorted to In the course of time she learned that she could void her bladder if she introduced a finger into the vagina and pushed the anterior vaginal wall backward during micturition When the patient first came under the author's observation, neither neurologic nor pelvic symptoms could be found that would explain the condition However, since the cystoscopically determined so called barrier formation reminded him of sphincter sclerotic in men, he considered this possibility, although this condition was not known to occur in women An operation was done on the basis of this probability diagnosis It was found that the urethral sphincter was unusually narrow It was decided to excise a wedge-shaped piece from

the posterior sphincter lip, however, when it was found that only a thin layer of tissue separated the vaginal lumen from the neck of the bladder, it was decided to make the excision from the anterior sphincter lip. After this the sphincter ring was wider. With the exception of a severe vesical hemorrhage, the recovery was uneventful. Histologic examination of the excised portion disclosed sclerosis. The author thinks that the occurrence of sphincter sclerosis in women proves indirectly for this disorder in men that such processes are not necessarily preceded by inflammatory processes in the prostate. The second case concerns a woman, aged 42, who had had intermittent disturbances of micturition for about twenty years. In the last two years the woman noted that she had to press harder in order to void the bladder. In the course of the examination it was found that the urethra was impassable for an ordinary catheter, but a thin one (12 Charrière) could be introduced into the bladder after an obstruction had been passed, which was located approximately in the middle of the urethra. After the stenosed portion of the urethra had been dilated, the disturbance in the micturition disappeared. The author points out that, although urethral stenosis is relatively frequent in men, it is rare in women.

Klinicheskaya Meditsina, Moscow

13 1755 1920 (Dec) 1935 Partial Index

Allergy B A Egorov—p 1755

Evaluation of Alcoholization of Intercoastal Nerves as New Type of Collapse Therapy in Pulmonary Tuberculosis M M Sheynin—p 1781

*Pathogenesis of Gout M Ya Nishnevich—p 1819

*Diabetes and Pregnancy E Ya Reznitskaya and P I Fomina—p 1832

*Increased Reactivity to Insulin in Diabetic Patients Under Influence of High Doses of Insulin V G Baranov—p 1838

Pathogenesis of Gout—According to Nishnevich, the etiologic pathogenesis of gout is polymorphous in character. It may be produced by any of the causes bringing about an alteration in the chemistry of the tissues and favoring precipitation and fixation of uric acid salts. Among such causes the author lists the various endocrinopathies and distinguishes a thyrotoxic, an ovarian and a pituitary form of gout. There exists a positive symbiogenesis between uric acid and sodium chloride, expressed by the fact that fixation of urates in tissues aids the mobilization of sodium chloride. Other elements, such as cholesterol, play a part in the phenomenon. Because of a close relationship between the water and the chlorine exchange it is necessary in the study of symbiogenesis in gout to take into account the water balance. Hypo-uricemia and hypo-uricuria rather than hyperuricemia and hyperuricuria are characteristic of a gouty condition. The amount of uric acid in the blood increases with the proper treatment and improvement in the basic disease and leads to hyperuricuria.

Diabetes and Pregnancy—Reznitskaya and Fomina state that the association of diabetes with pregnancy has been seen with greater frequency since the introduction of insulin. A normal course and a favorable prognosis for mother and child are made possible by the employment of rational therapy. In some of the pregnant diabetic patients an increased sugar tolerance was noted in the second half of gestation. This is possibly due to the functioning of the pancreas of the fetus. Hemorrhages toward the end of gestation and after delivery are frequent in diabetic women and may be explained by the increased permeability of the vascular walls. Stillbirths, overweight fetuses and hydramnion are relatively frequent. The more suitable diet is one rich in carbohydrates and poor in fats. Rational insulin therapy is well borne. Cases of glycosuria and of renal diabetes do not require insulin and are to be treated by moderate limitation in carbohydrate intake. Their course of pregnancy, labor and postpartum period run a normal course. Diabetes mellitus even in its grave form is not an absolute indication for artificial interruption of pregnancy, provided the patient is properly treated and controlled (dispensary observation). As a prophylaxis the authors stress repeated examinations of twenty-four hour specimens of urine for sugar and the study of blood curves in cases of glycosuria.

Increased Reactivity to Insulin Under Influence of High Doses—Baranov states that there is an increased reactivity to insulin if the patient has been treated with insulin doses sufficiently high to keep his blood sugar content low

(below 130 Gm) during the day. This increased sensitiveness to insulin is manifested by hypoglycemic curves for some time after the administration of smaller doses. This fact permits lowering of insulin dosage with a simultaneous increase in the quantity of carbohydrates even in the graver cases of diabetes. The author has taken advantage of this fact to simplify the insulin therapy when its continued use is indicated and to terminate it in a number of milder cases. The so called acquired tolerance to insulin probably does not exist and is to be charged to improper methods of therapy.

Norsk Magasin for Lægevidenskapen, Oslo

97 1 192 (Jan) 1936

Blind Passages of Male Urethra Particular Reference to Morgagni's Lacune and to Examination and Treatment by Aid of Two Bladed Urethral Speculum H C Gjessing—p 1

Granulocytopenia Produced Artificially by Aminopyrine (Bayer) Ca e J Kloster—p 25

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Triboulet Reaction in Patients Having Clinically Normal Intestine—Hallberg found a positive Triboulet reaction in ninety-five, or 56.89 per cent, of 167 patients without clinical evidence of disturbances of the intestinal tract and concludes that, for the present, the diagnosis of intestinal tuberculosis must depend on clinical and roentgenologic results.

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*Clinical Experiences with Hypernephromas from 1913 to 1933 on Basis of Thirty Seven Hypernephromas of Kidney and One Hypernephroma of Liver P Bull—p 1

Experiences with Hypernephromas of Kidney and Liver—Bull says that, while hypernephromas are highly malignant, the prognosis is not always hopeless even with grave complications. The only effective treatment is removal of the affected kidney as early as possible. Radium or roentgen treatment attempted in some of his cases gave no results. Nephrectomy was done in twenty-six cases (in twenty extraperitoneal, in six transperitoneal) with two deaths from operation, one from pulmonary embolus about six hours after operation and the other from uremia five days after operation. One patient presenting hypernephroma complicated with pyonephrosis died fifteen hours after pyelography (22 cc of a 25 per cent solution of sodium bromide). Of twenty-four patients, eleven, or 45.87 per cent, lived more than three years after nephrectomy (excluding the two operative deaths, eleven out of twenty-two or 50 per cent). Of the seven or 31.87 per cent, without recurrence, five are living from three and one-half to thirteen years after operation and two died seven and four and two thirds years, respectively after operation. The thirteen nephrectomized patients who died from recurrence lived an average of three years after the first symptom, and the ten who were not operated on an average of about two years. Hematuria alone was the first symptom in 30 per cent of the cases, hematuria with pain in 30 per cent. The author urges the necessity of pyelography in obscure hematurias and in hematurias of clearly renal origin. In a woman having intermittent fever of unknown cause for seven months, necropsy revealed a hypernephroma of the kidney. In another instance bone metastasis was the first symptom, necropsy two years later showed a hypernephroma the size of an egg, with metastases. While the prognosis seems to depend partly on the size of the tumor, the large hemorrhagic cysts are less malignant than the usual hypernephromas, and size alone does not contraindicate operation. One patient, with local recurrence, is alive twelve years after removal of a cystic tumor weighing 107 Kg, with characteristic hypernephroma only at the hilus. A tumor thrombus in the renal vein or vena cava increases the gravity of the prognosis. Atypical hypernephromas are apparently more malignant than the typical. Solitary metastasis may appear and long continue solitary, such metastases, especially in the bone, should be extirpated if radical removal is possible. Full description of the thirty seven cases is given, together with report of a case of atypical hypernephroma of the liver extirpated from the right lobe of the liver in 1934.

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ARE THERE CYCLIC CHANGES IN THE HUMAN VAGINAL MUCOSA?

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Hitschmann and Adler showed that the human uterine mucosa undergoes cyclic morphologic changes which depend on the ovarian function. Stockard and Papanicolaou, Long Evans and Allen proved that in rodents not only the uterine mucosa but also the vaginal mucosa and vaginal secretion show cyclic morphologic changes determined by the ovarian function. Hence it is probable to assume that the human vagina is also under the influence of the ovarian hormones. Dierks¹ in 1927 showed that during the menstrual cycle definite proliferative and destructive changes occur in the human vaginal epithelium. In the first days after the beginning of the last menstrual period a division of the vaginal epithelium into three layers is noticeable. This is more strikingly marked during the premenstrual period. Through the early appearance of an intra-epithelial zone of cornification the human vaginal epithelium may be divided into a functionalis, the layer of regeneration and change, and a basalis. Proliferation and sequestration take place in the functionalis. During menstruation the functionalis and partly the intra-epithelial zone of cornification are thrust off, so that a denuded basalis is left on the surface.

The investigations of Dierks have been repeatedly retested. The opinions of the authors vary. Steve², Stemshorn³, Kuckens⁴ and Gisbertz⁵ could not confirm the results of Dierks. Geist⁶ expresses his opinion in the affirmative but emphasizes that not every case shows the characteristic changes. While Dierks describes the division into three layers of the vaginal epithelium as the characteristic changes, Geist mentions the changes in the thickness of the mucosa and the vacuolization in the basalis. Smith and Brunner⁷ also mention the vacuolization, which they find especially during the post-menstrual and premenstrual phase. Special attention is called to the work of Davis and Hartman,⁸ who in their

thorough investigations of a group of monkeys found the same typical cyclic changes in the vaginal epithelium as Dierks described for the human vaginal mucosa.

It would be of great importance for clinical and scientific research if a definite unmistakable "test object" were available to prove the presence of hormone activity. In human beings, one must essentially resort to the examination of the uterine mucosa. Although the removal of a piece of uterine mucosa is easily accomplished with our method on an ambulant patient (described later), it would be much simpler if one could use a strip of the vaginal mucosa for the test object. Since, according to the work of the aforementioned investigators, it seemed that the vaginal mucosa undergoes the same cyclic changes as the uterine mucosa and that it could as well be correlated with the ovarian activity, we tried to use the vaginal mucosa as an indicator for ovarian function. During our investigations we noticed that the changes of the vaginal mucosa are in no way comparable to the changes in the uterine mucosa. We could not be convinced—to say it beforehand—that any characteristic or specific changes occur in the vaginal mucosa during the various phases of the menstrual cycle. When we tried independently to examine the vaginal mucosa in order to determine its menstrual phase, we would always come to different conclusions. It was impossible to recognize from the histologic picture of the mucosa either the day or the phase of the menstrual cycle. Since with our method we could easily and without pain remove strips of the vaginal epithelium, we could also examine different parts of the vaginal mucosa of the same patient, for example, to the right and left near the portio at the same level, or at different levels near the portio and near the introitus vaginae. The results were that the vaginal mucosa of the different parts showed different histologic pictures, so that for instance in the same strip in one place the division into three layers is discernible while in another place it is absent (figs 1 and 2).

METHOD

The material on which the investigations have been based heretofore were obtained through biopsies, which occurred mostly during operations. Therefore it was possible to get from each patient a specimen of only one phase of the cycle. We used a simple method which the senior author is using for ambulatory examinations of the uterine mucosa. By means of a small very sharp and, in front curved curet, which was constructed for this purpose, a smear of the vaginal mucosa is made under pressure. Thus a strip of about 2 cm in length and about 2 mm in width can be easily removed. This is done without even local anesthesia and is absolutely painless. This procedure may be repeated as often as is necessary, so that it is possible to study without any difficulty the entire menstrual cycle on the same woman.

From the Gynecologic and Obstetric Department of the Rothschild Hadassah Hospital Jerusalem. The experiments have been carried out with the support of the Rockefeller Foundation.

1 Dierks K. Arch f Gynak 130 46 1927.
2 Steve H. Ztschr f mikr anat Forsch 24 213 (April) 1931.
3 Stemshorn. Zentrbl f Gynak 55 194 (Jan 24) 1931. Verhandl d anat Gesellsch 36 51 1927.

4 Kuckens Hans. Ztschr f Geburtsh u Gynak 96 55 1929.
5 Gisbertz H. Arch f Gynak 136 562 1929.
6 Geist S H. Surg Gynec & Obst 51 848 (Dec) 1950.
7 Smith B G and Brunner E K. Am J Anat 34 27 (Jan) 1934.

8 Davis M E and Hartman C G. Changes in Vaginal Epithelium During Pregnancy in Relation to the Vaginal Cycle. J A M A 104 39 (Jan 26) 1935.

We have been using a modified staining method of Papanicolaou in order that the cornification of the cells of the vaginal mucosa may be better discernible. The specimen was first stained with the hematoxylin-eosin method and, following it, counterstained with water-blue.

The following serve as our criteria:

- 1 The number of cell layers in the basalis
- 2 The number of cell layers in the functionalis
- 3 The presence of vacuolated cells in the functionalis
- 4 Division of the mucosa into three layers: basalis, functionalis and the intra-epithelial zone of Dierks
- 5 Degree of intra-epithelial cornification

The results of observations on the various days of the cycle are seen in the accompanying tables.

TABLE 1—*Vaginal Mucosa of Various Phases of Normally Menstruating Women*

Case	Menstruation	Number of Cell Layers of Basalis	Number of Cell Layers of Functionalis	Vacuolated Cells	Three Layers	Cornification
1 (a)	1st day	8-10	12-16	++	—	±
2	5th day	6-9	10-16	+	—	+
3	6th day	4-8	10-12	++	—	±
4	8th day	4-7	16-18	++	—	—
5	10th day	5-7	14-18	++	—	—
6	10th day	7-13	6-8	++	+	±
7	10th day	3-6	10-12	++	—	+
8	10th day	7-11	10-12	—	±	+
1 (b)	11th day	4-7	14-20	+	±	+
9	13th day	7-9	16-20	+	+	+
10	14th day	2-3	20-24	+++	—	±
11	15th day	4-6	18-22	+++	—	±
12	17th day	4-8	18-20	++	—	±
1 (c)	18th day	3-5	12-16	+++	+	++
1 (d)	21st day	10-12	14-18	+++	—	+
13	22nd day	5-7	14-18	++	—	—

Without going into detail, it should be mentioned that we found the same picture in different phases of the cycle. Thus for example we found on the twenty-second day of the cycle (case 13) in the basalis from five to seven and in the functionalis from fourteen to eighteen cell layers, many vacuolated cells in the func-

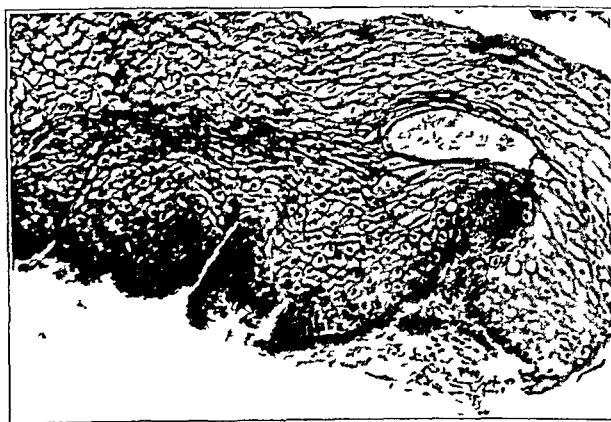


Fig. 1 (case 3)—Sixth day of the cycle. Mucosa near portio to the right. Note the thickness of the basalis and the intra-epithelial zone of the cornification which is absent in figure 2.

functionalis, no division into three layers and no cornification. Almost the same changes were seen on the eighth day of the cycle (case 4). Figure 3 shows on the twenty-second day of the cycle no sign in the vaginal mucosa which should be characteristic for the changes of the premenstrual phase. Figures 1 and 2, the mucosa of the sixth day of the cycle (case 3), on the other hand shows in one place an intra-epithelial

zone of Dierks, which is characteristic for the premenstrual phase. A piece of the mucosa of the same patient, which was removed from another part of the vagina, shows no intra-epithelial zone of cornification, fewer cell layers, a picture which corresponds to the postmenstrual phase. Thus is seen on the sixth day of the cycle (case 3) in the same vaginal mucosa two different pictures, the one corresponding to the premenstrual and the other corresponding to the postmenstrual phase.



Fig. 2 (case 3)—Sixth day of the cycle. Mucosa below the portio to the right.

AMENORRHEA

The large material of functional ovarian disturbances at our disposal in our clinic enabled us to remove a large number of vaginal strips from patients with amenorrhea. The results are summarized in table 2. The observations in cases of primary amenorrhea are of special importance. In these cases the genitals show the characteristic poor development (atrophic labia, hypoplastic uterus and atrophic uterine mucosa). On the vaginal mucosa, however, this functional disturbance of the ovaries was not noticeable. In patient 14

TABLE 2—*Vaginal Mucosa of Patients with Primary and Secondary Amenorrhea*

Case	Amenorrhea Years	Cell Layers of Basalis	Cell Layers of Functionalis	Vacuolated Cells	Three Layers	Cornification	Treatment
Primary Amenorrhoea							
14		5-6	12-22	+++	—	—	300 000 mouse units of estrogenic substance
14 (a)		3-4	12-14	++	—	—	
14 (b)		4	12-16	±	—	+	
16		5	10-12	++	—	++	400 000 mouse units of estrogenic substance
17		7-9	15-18	++	—	+	
18 (a)		4-5	10-12	±	—	±	
18 (b)		6	20-26	++	—	—	
18 (c)		5-7	10-14	+	±	±	
Secondary Amenorrhoea							
19	2½	8-11	12-16	+	—	+	
20	8	7-7	12-14	+	+	++	
21	1¼	7-9	16-18	±	+	++	
22	1	5-6	14-16	++	±	+	
23	5	6-8	14-16	+	+	++	
24	2	5-8	12-16	—	—	+	
25	3½	5-6	14-18	++	+	+	
26	1½	5-9	18-20	+++	—	—	
27	2	5-7	18-20	+	—	—	
28	3	7-7	8-10	+	±	+	

a woman aged 29 who had never menstruated, we found a basalis of from five to six cell layers, a functionalis of twelve to twenty-two cell layers, numerous vacuolated cells in the functionalis (++++), and no intra-epithelial zone of cornification. Almost the same changes were seen on the seventeenth day of the cycle of a normally menstruating woman (patient 12). The cornification differed greatly in the cases of primary amenorrhea. In cases 14 and 15 it was absent, and it was present in cases 17 and 18. In cases of primary amenorrhea we were able to produce menstrual bleeding, i. e., bleeding of a proliferative and premenstrual mucosa. If we injected into a patient with primary

amenorrhea from 300,000 to 400,000 mouse (international units) of estrogenic substance⁹ during twenty days, bleeding out of a proliferative uterine mucosa usually occurred a few days later. If following the injection of estrogenic substance the patient is further treated with 40 rabbit units (Clausberg units) of progesterin for from five to six days, bleeding occurs out of a premenstrual mucosa from two to three days after cessation of the treatment, which is generally known. The uterus shows a measurable increase in size up to normal. Hence an atrophic uterus in a patient with primary amenorrhea can be brought to good function, the uterus can be stimulated generatively and vegetatively, but characteristic changes cannot be found in the vaginal mucosa of such patients (fig 4). A glance at the uterine mucosa in such cases suffices to recognize the specific hormone effects. But on the vaginal mucosa, on the other hand, it is impossible to determine whether the specimen was removed before or after the injections.

In cases of secondary amenorrhea, we could likewise not notice on the vaginal mucosa any signs of deficiency or absence of the ovarian function, while on the uterine mucosa it was distinctly recognizable. In patient 20 (a woman, aged 30, with amenorrhea of eight years' duration) a picture is seen which is described in the

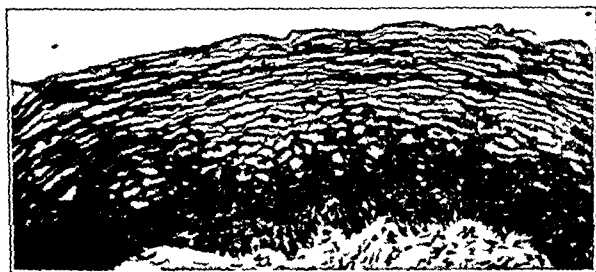


Fig 3—Mucosa of the twenty second day of a normally menstruating woman

literature for the premenstrual changes: a basal layer of from five to eight and a functionalis of from twelve to fourteen cell layers, division into three layers, and cornification (fig 5).

THE INFANTILE VAGINAL MUCOSA

We had the opportunity of examining the vaginal mucosa of girls aged from 4 to 8 years who suffered from acute or subacute gonorrhea. The children were treated with large doses of estrogenic substance in order to influence the gonococcal infection. (The results are reported elsewhere.) What interests us here is the appearance of the infantile vaginal mucosa and the morphologic changes brought about by the estrogenic substance. The mucosa consists of about ten to sixteen cell layers. The cells are round, are rich in protoplasm and contain dark staining nuclei. Vacant cells are absent and so are cornification and the three layered appearance. After three weeks' treatment with estrogenic substance a distinct change is noticeable. The superficial cell layers become flattened and partially vacuolized just as in a functionalis of an adult. The division into three layers is not seen. These are the only definite characteristic changes that we have noticed during our investigation. What does this result mean? It is possible to consider it as a hormone effect which causes the morphologic changes in the vaginal mucosa. But one must be cautious in this interpretation, since

similar changes have not been found in patients with amenorrhea who have been treated with estrogenic substance. One must think of a different possibility. The genital tract becomes hyperemic through the estrogenic substance, and under the effect of this hyperemia changes may occur in the infantile genital tract which are not found in the adult. It should also be mentioned that Stieve, in examining Dierks' observations

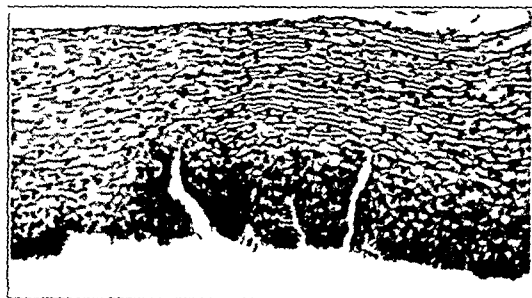


Fig 4—Primary amenorrhea. Bleeding after injection of 400,000 mouse units of estrogenic substance

found analogous changes as in the vaginal mucosa in other mucous membranes (mouth and pharynx). It is naturally impossible to remove pieces of the mucous membrane of the mouth or pharynx from a living person, and especially from a child, so that it is difficult to prove this theory.

Our results surprised us. Since the uterus and vagina are both derived—as was believed till now—from the müllerian duct, it would be expected that the two should be affected in the same manner and degree by the ovarian hormones. The explanation for these negative results may be found in the work of Koff.¹⁰ The uterus is derived in all animals from the müllerian duct. The development of the vagina is more recent and varies in different species. In man it is derived partially from the müllerian duct and partially from the urogenital sinus. In the human embryo the stimulation for the formation of the vagina begins from two sinovaginal bulbs which later fuse and form the

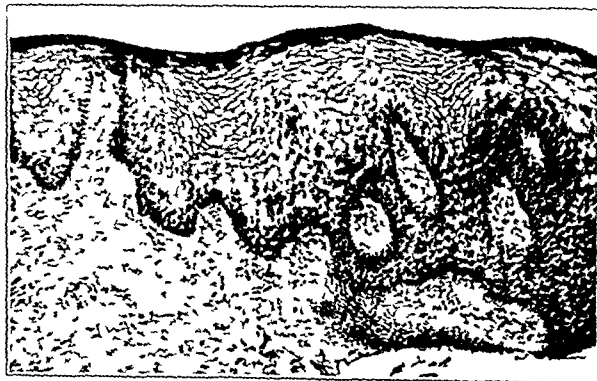


Fig 5—Secondary amenorrhea of eight years duration. Thick mucosa divided into three layers with intra epithelial cornification

caudal or hymenal part of the vaginal plate. The vagina would fail to develop if these sinovaginal bulbs should be damaged. For its greater part the vagina is derived from the müllerian duct. Thus the human vagina is derived from two distinct parts." Hence it is explainable that the vagina in different species reacts

⁹ We used Dimenformon (hydroxyestrin benzoate) kindly supplied to us by Organon Oss Holland.

¹⁰ Koff A. K. Carnegie Institution Washington pub 443 Contributions to Embryology, no 140 24 59 91 1933

differently, that in one species it may and in another it may not be subject to the cyclic influence of the ovaries

Since R Meyer¹¹ and E Vilas have shown that the sinus epithelium is replacing the disappearing müllerian epithelium in the development of the human vagina and that the müllerian ducts serve only to pave the way for the sinus epithelium one cannot even expect the human vagina to respond to hormones in the same way as does the uterus

CONCLUSIONS

1 In the human vaginal mucosa we could not find cyclic changes analogous to those of the uterine mucosa

2 The vaginal mucosa shows different microscopic pictures in different places

3 In deficient ovarian function (primary amenorrhea) is found a picture of a mucosa similar to one with good ovarian function with even the same changes as in the premenstrual phase

4 In the absence of ovarian function, by means of ovarian hormones (estrogenic substance, progestin) we could produce enlargement of the uterus a proliferative and a premenstrual uterine mucosa and menstruation, but we could not find analogous changes in the vaginal mucosa

5 In human beings the infantile vagina may be influenced by estrogenic substance, but it is not certain whether it is because of a specific hormone effect on the vaginal mucosa or on the mucous membranes in general

6 Since the vagina is developed embryologically different in different species the different reaction of the vaginal mucosa is explainable

CHRONIC CARDIAC COMPRESSION DUE TO CONSTRICTING PERICARDITIS

RELIEF BY PERICARDIOTOMY, WITH A NOTE ON THE VALUE OF THE ROENTGENKYMAGRAPH

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In the realm of practical surgery the only direct operative attacks that may be made on the central circulatory system are for the relief of cardiac compression, acute or chronic. This comprises the removal of intrapericardial fluid, the prevention of its reaccumulation (including the suture of wounds of the heart), and the resection of constricting scar. The extraction of pulmonary emboli, the direct attack on valvular lesions and attempts to increase the blood supply of the heart are still within the domain of experimental surgery.

A syndrome which has increasingly engaged the attention of clinicians, especially during the past fifteen years, is that caused by a lesion variously designated as adhesive pericarditis, Pick's disease, mediastinopericarditis, concretion pericardii, pericarditic pseudocirrhosis and a host of other terms descriptive of its pathologic anatomy. Volhard,¹ Schmieden,² White,³ Churchill⁴

and others⁵ have contributed important studies during the last ten years, but the most outstanding contributions have been those of Beck.⁶ He has crystallized the physiologic point of view in place of the older anatomic and pathologic concepts. His experimental and clinical studies have shown that compression of the heart from any cause produces the "inflow stasis" of Volhard.¹ The amount of blood entering the heart is reduced as the result of pressure on the orifices of the great veins and by restriction of diastolic expansion of the auricular and ventricular chambers. The resulting clinical manifestations differ only in the rapidity with which compression occurs and not in the cause of compression. Rapidly increasing pressure gives rise to a syndrome characterized by the clinical triad of (1) falling arterial blood pressure, (2) rising venous blood pressure and (3) a small quiet heart. Slowly developing compression exhibits the triad of (1) high venous blood pressure, (2) ascites and (3) a small quiet heart.^{6a} In both these triads the size of the heart itself must be distinguished from that of the pericardial sac. It should be emphasized that the compressed heart cannot dilate on account of the mechanical effect of compression. Hypertrophy is likewise prevented by the obstructive action of pressure on the coronary circulation. Schmieden² especially has stressed the impaired nutrition of the myocardium that results from compression of the heart.

When one appreciates these physiologic sequelae of cardiac compression, the diagnosis of these formerly obscure conditions is less difficult and their relief becomes a matter of carefully applied surgical attack on the cause. The recognition of cardiac compression is still so infrequent, however, that additional aids to diagnosis are of value especially such an aid as can give a positive record of the amplitude of cardiac excursion before and after treatment. Cases treated by surgery are also sufficiently rare that records may be of value in developing and evaluating the worth of operative procedures.

REPORT OF CASE

History—H B, a white youth, aged 17, an apprentice jockey, admitted to the Louisville City Hospital, Jan 17, 1935, complained of painless swelling of the abdomen which had increased progressively for three months. He had had occasional night sweats a few years before. There was no history of rheumatic fever, pneumonia or pleurisy. He had noticed excessive fatigue for about six months. Dyspnea on exertion had appeared coincident with the abdominal swelling. His weight had increased from 118 to 130 pounds (53.5 to 59 Kg.) but he stated that he seemed to have lost weight from the shoulders and extremities. There had been no visible jaundice and no swelling of the feet or ankles. Other symptoms included a slight cough, moderate discomfort in the upper right quadrant of the abdomen, and puffiness of the face in the morning. There had been one attack of precordial pain five days before admission. Nausea and vomiting had occurred a few times since the onset. For several weeks orthopnea had been sufficient to disturb his sleep.

Examination—Slight dusky cyanosis of the face was apparent on examination. Both external jugular veins were distended and pulsating. The sclerae were yellowish. Aside from flatness and distant breath sounds in the left base, the lung fields were normal. The heart was small and the apex beat was

11 Meyer R. Arch f Gynak 158 639 738 1934
From the Department of Surgery, Louisville City Hospital and the University of Louisville School of Medicine

1 Volhard and Schmieden. Klin Wchnsch 2 5 (Jan 1) 1923
2 (a) Schmieden V. Acta chir Scandinav 57 268 1924 (b) Zentralbl f Chir 51 46 (Jan 12) 1924 (c) Arch f Klin Chir 138 552 1925 (d) Surg Gynec & Obst 43 89 (July) 1926 (e) Schmieden V and Fischer H. Ergebn d Chir u Orthop 19 98 1926

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6 (a) Beck C S and Griswold R A. Pericardiectomy in the Treatment of the Pick Syndrome. Arch Surg 21 1064 (Dec) 1930 (b) Beck C S. The Surgical Treatment of Pericardial Scar. J A M A 97 824 (Sept 19) 1931 (c) Beck C S and Cushing E H. Circulatory Stasis of Intrapericardial Origin. ibid 102 1543 (May 12) 1934 (d) Beck C S. Two Cardiac Compression Triads. ibid 104 714 716 (March 2) 1935

neither visible nor palpable. Heart sounds were distant but regular, and there were no adventitious sounds. The pulse rate at rest varied from 80 to 100 per minute and the blood pressure was 100 mm of mercury systolic, 70 diastolic. Broadbent's and other signs characteristic of retraction of the chest wall by extrapericardial adhesions were absent. There was slight edema of the scrotum but not of the extremities. The abdomen was distended with fluid, and 6,000 cc of this fluid was removed by paracentesis. It was transudate in nature and was sterile on culture and on guinea-pig inoculation. After paracentesis



Fig 1—Preoperative appearance of the chest. The heart is not enlarged. There is widening of the upper mediastinal shadow owing to the distended superior vena cava.

the liver was found to extend three fingerbreadths below the costal margin, and the spleen was easily palpable. Both were slightly tender. The ascites rapidly recurred weekly taps yielding 3,200 cc, 5,000 cc, 5,000 cc and 5,000 cc. Routine laboratory tests showed nothing remarkable except an icterus index of 45. Six foot roentgenograms of the chest showed the heart-chest ratio to be 12.4 cm-29.3 cm. There were calcification in the root areas and increased markings consistent with an old tuberculous process (fig 1). On fluoroscopy no motion of the ventricles could be made out. The excursion of the auricles appeared to be slightly exaggerated and a definite pulsating superior vena cava was visible. The electrocardiogram showed a small, slurred QRS complex and sufficient change in the shape of the complexes with change of position of the patient to rule out fixation of the heart in the chest. Determination of the cardiac output by the dye injection method was carried out by Dr. John Walker Moore and Dr. I. M. Kinsman. The minute volume output was 376 liters and the stroke volume output 36.9 cc. Venous pressure taken by the direct method in the right arm was 240 mm of physiologic solution of sodium chloride.

It will be noted that the conditions found in this case satisfied the requirements of the triad of chronic cardiac compression, that is, high venous pressure, ascites and small quiet heart. In addition there was decompensation out of proportion to apparent cardiac disturbance and ascites out of proportion to edema, both of which are important corroborative manifestations. The low pulse pressure, fluoroscopic observations and small slurred QRS complex were suggestive. The mobility of the heart in the chest ruled out fixation by extrapericardial adhesions, but it should be noted that chronic cardiac compression produced by scar can exist without fixation of the heart.

Diagnosis—At about this time Johnson completed the roentgenkymograph that he has described.⁸ This gave most gratifying and irrefutable evidence of the reduced amplitude of cardiac pulsation and of the throttling effect of this disease on the heart. It also supplied a graphic record that could be com-

pared with postoperative plates to demonstrate the efficacy of pericardiectomy. The roentgenkymogram taken just before operation showed absolute lateral immobility of both ventricular regions indicating a marked degree of compression (fig 2). The left auricular curve was abnormal and somewhat exaggerated. The aortic waves were greatly diminished, a result of the low pulse pressure. Since there was no lateral ventricular motion and absolute ventricular immobility would not be compatible with life, it seemed reasonable to suppose that the augmented auricular curve was produced by upward diastolic expansion of the ventricular chambers into the auricular region. This would be merely an exaggeration of the normal diastolic shift of the auriculoventricular septum.⁹

Operation—This was performed February 22 under combined procaine intercostal block and closed nitrous oxide-oxygen anesthesia. The technic in general was that which has been previously described.¹⁰ The exposed pericardium was dense white leathery and almost motionless although transmitted pulsation could be felt. When the scar was incised it was found to be from 2 to 3 mm thick and was everywhere adherent to the heart. Dissection was carried out over the left side of the heart first, following the suggestion of Schmieden,¹¹ to avoid undue dilatation of the right heart. As the dissection progressed, the heart could clearly be seen to enlarge and to bulge out of its constricting shell. Dissection was carried out until the finger could be swept completely around the heart over the auricles and ventricles. The heart could be easily lifted forward and upward to give a complete view of the intrapericardial portion of the inferior vena cava. Dissection over the auricles was by sharp knife. Over the ventricles, a combination of blunt and sharp dissection was utilized. The pericardium was excised laterally back to the region of both phrenic nerves and on the diaphragmatic aspect to within 2 cm of the vena cava. Several small openings were made into both pleural cavities but were easily compensated for by positive pressure anesthesia. These openings were closed with silk with the exception of one into the left pleura, which was enlarged to 4 cm and left open to provide drainage from the field of operation into the pleural cavity. The soft parts of the chest were closed in layers with fine silk without drainage. Hemostasis was obtained throughout by the endotherm. Pathologic exam-



Fig 2—Preoperative roentgenkymogram showing no waves over either ventricular area. This clearly indicates complete absence of lateral ventricular movement due to the choking effect of the tight inelastic pericardial scar. The exaggerated abnormal auricular waves are probably caused by the upward thrust of the ventricles into the auricular space during ventricular diastole since this is the only avenue possible for ventricular expansion. Aortic waves are diminished in consequence of low pulse pressure.

ination of the excised scar showed much scarred pericardium with residual active chronic inflammation. There was no evidence of tuberculosis.

Several points in the technic of this procedure may well be emphasized. It should be the rule in all cardiac

7 Beck and Griswold⁸ Sampson J J and Roenblum Harold
Am Heart J 10 240 (Dec) 1934
8 Johnson S E Surg Gynec & Obst 61 169 (Aug) 1935

9 McKenzie James Disease of the Heart ed 2 New York Oxford
University Press 1910 p 17
10 Beck and Griswold⁸ Griswold R A Kentucky M J 31 501
(Oct) 1935

operations to have intratracheal or positive pressure anesthesia available to compensate for probable injury to the pleura. Dissection of the scar from the heart must be carried out with great care. Forceful blunt dissection is contraindicated, since in many instances scar and even calcium deposits may extend into the myocardium. Meticulous sharp dissection is especially

advisable over the auricles, the thin walls of which are seldom so strong as the fibrous adhesions. Blunt dissection may be most gently and safely carried out over the ventricles by allowing the rhythmic contractions of the myocardium to break the adhesions as the finger lies motionless in the angle formed by the heart and the freed portion of the myocardium. Manipulations within the pericardium cause considerable cardiac irregularity, and frequent periods of rest are necessary to restore normal

rhythm and maintain cardiac function within safe limits. Haste has no place in this operation.

The drainage of the large amount of fluid which forms about the heart after this and other cardiac operations is a serious problem.¹¹ The absorptive qualities of the mediastinal tissues are uncertain, and

seen fluid pumped in and out of such a wound with each respiratory excursion will appreciate the danger. The most satisfactory way out of this dilemma is to leave a generous opening (from 3 to 5 cm) for drainage into one of the pleurae. During the postoperative period the effusion is removed from the pleura by syringe and needle as indicated. I have been so impressed with the ease and safety of this method of drainage that it has been used by myself and Drs. J. M. Mayer¹² and E. M. Drissen (resident surgeons at Louisville City Hospital) in several heart wounds with gratifying absence of postoperative cardiac compression and infection. Usually an existing rent in the mediastinal pleura may be enlarged to the proper size.

Postoperative Course—On account of slight cyanosis, the patient was placed in an oxygen tent for the first few days as a precautionary measure. The pulse was slightly irregular

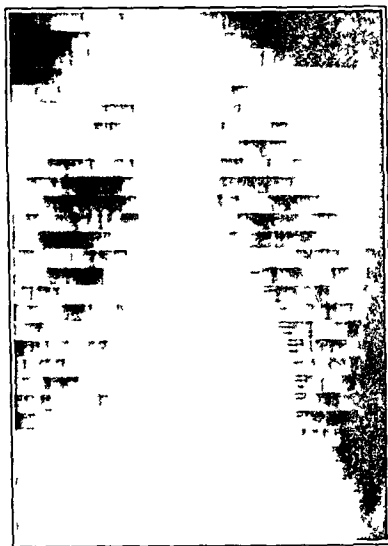


Fig 3—Postoperative roentgenogram showing practically normal cardiac mobility. There is wide amplitude of pulsation over both ventricular areas. This demonstrates adequate decompression by pericardiectomy. The auricular curves appear normal and deep aortic waves demonstrate increased pulse pressure.



Fig 5—Appearance of the patient showing the operative scar.



Fig 4—Excised segments of pericardial scar.

enough fluid may collect within a few hours to produce serious compression of the heart. Leaving a drainage tract leading to the surface of the skin carries with it a real hazard of infection. Any one who has

for four days but the rate never exceeded 120 per minute. During the first four days a total of 1,375 cc of serosanguinous fluid was aspirated from the left pleural cavity. The preoperative cyanosis and distention of the external jugular veins disappeared completely within ten days. The wound healed without drainage or infection. Slight fever (as high as 101.4 F) about the tenth day was thought to be due to a tender swelling which appeared in the right supraclavicular region and persisted for about one week. In the light of later observations this probably was thrombosis of the right subclavian vein. The urinary output exceeded the fluid intake on the thirteenth day. No abdominal paracenteses were done after operation and by the fifteenth day, when the patient was allowed out of bed the ascites had definitely diminished. Abdominal fluid could not be detected on the eighteenth day and has never recurred. The six foot roentgenogram of the heart showed that the cardiac shadow had increased from 12.4 cm to 13.5 cm in width. Postoperative roentgenograms (fig 3) demonstrated clearly the efficacy of the operation that freed the heart from its constricting shell. Ample ventricular excursion was apparent on both sides and the deep aortic curves indicated increased pulse

11 Cutler E. C. and Beck C. S. Surgery of the Heart and Pericardium. Nelson's Loose Leaf Surgery. 4: 265, 1927. Cutler E. C. Surgery of the Heart and Pericardium in Lewis' Dean Practice of Surgery. Hagerstown, Md. W. F. Prior Company, vol. 4, chapter 13, pp. 26 and 44.

12 Mayer J. M. Surg. Gynec. & Obst. to be published.

pressure Three months after operation, cardiac output determination by the dye injection method showed a minute volume output of 790 liters and a stroke volume output of 888 cc more than double the preoperative output At this time an unduly high (255 mm) venous pressure reading led to the discovery that there was thrombosis of the veins draining the right upper extremity Venous pressure in the left arm was 75 mm of physiologic solution of sodium chloride The electrocardiogram at this time again showed sufficient change in the shape of the complexes to rule out fixation of the heart in the chest The QRS complex in lead 1 was small and slightly inverted Leads 2 and 3 were negative The pulse rate was 90 per minute and the blood pressure 112 mm of mercury systolic, 74 diastolic Six months after operation the pulse rate was 100 per minute the blood pressure 108 mm of mercury systolic 50 diastolic, and the venous pressure 60 mm of physiologic solution of sodium chloride Nine months after operation the patient was normal in every way except for slight tachycardia There had been no recurrence of ascites dyspnea or other cardiac symptoms and he was working regularly as a tobacco grader

At present one year after operation the patient has returned to his occupation as a jockey and has been training and exercising thoroughbreds for the past two months without cardiac symptoms This is extremely strenuous exercise

SUMMARY

1 In a patient with chronic cardiac compression caused by scar (the Pick syndrome) complete relief was obtained by resection of the constricting scar

2 The roentgenokymogram is of value both as a positive diagnostic measure and as evidence of the efficacy of pericardiectomy

3 There are advantages of decompression of the heart during the postoperative period by drainage into the pleura

PONTILE ABSCESS

REPORT OF TWO CASES

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AND

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The occurrence of abscesses in the pons is, like that in the medulla and spinal cord rare when compared with the incidence of abscesses elsewhere in the central nervous system¹ Thus, Gowers² found among 231 cases of brain abscess only three in the pons, and, according to Cassirer, LeFort and Lehmann³ found only six cases among 458 Among the forty-five cases of brain abscess in a series of 7349 necropsies at the Cook County Hospital⁴ from Jan 1, 1929, to July 1, 1935, only two were in the pons The distribution of the forty-five cases is given in table 1 The etiology of the types present is distinguished in table 2

The vascular supply and location of the pons probably explain its relative immunity to abscess formation Since emboli usually enter the brain by way of the carotid arteries, metastatic abscesses can only seldom reach the pons, as the latter gets its blood supply from a different source—the basilar and vertebral arteries Its location in the posterior cranial fossa removed from

the more common sources of cerebral infection (compound skull fractures, sinusitis, otitis, mastoiditis) explains the infrequent spread of infection into the pons

The clinical picture of pontile abscess is markedly polymorphous In the majority of cases it is that of hemiplegia alternans inferior Also known as the Millard-Gubler syndrome, it is characterized by an ipsi-

TABLE 1—Distribution of Abscesses in Forty-Five Cases

Frontal	9
Temporal	11
Parietal	2
Occipital	4
..	3
..	3
Cerebellar	9
Pons	2
	49

TABLE 2—Etiology

Metastatic	16
Secondary to otitis and mastoiditis	13
Secondary to sinusitis	4
Secondary to skull fracture	3
In association with meningitis	4
Of questionable etiology	5
	45

lateral paralysis of the face and a contralateral hemiplegia This syndrome denotes a lesion in the basilar portion of the pons The much rarer type is that of Foville, which was present in our first case

REPORT OF CASES

CASE 1—History—F E, a white man aged 65, admitted to the neurologic ward of the Cook County Hospital May 8, 1935, complained of headache of two weeks' duration which was so severe that he was forced to go to bed The day following the onset he noticed that he could not close his right eye and that there was numbness over the left side of the body Difficulty in speaking and swallowing gradually developed At the time of admission to the hospital he could no longer walk He had had gonorrhea and the usual diseases of childhood He was married his wife was living and well and he had no children

Examination—The patient was fairly well developed and did not appear acutely ill The temperature was 99.2 F, the pulse rate was 112 and the respiration rate was 26 The blood pressure was 150 systolic and 90 diastolic The heart tones were distinct and there were fine crepitant rales throughout the bases of both lungs posteriorly The abdominal organs were essentially normal The patient could neither close his right eye nor wrinkle the right side of his forehead The right nasolabial fold was obliterated The right pupil was dilated and the right eyeball could not be moved outward The conjunctiva of the right eye was severely injected and there was an opacity of the cornea The left eyeball could be moved in all directions and the pupil reacted well to light and in accommodation The right side of the pharynx was relaxed and the tongue deviated to the right when protruded There was difficulty in hearing and speaking with diminution of the sensations of pain and touch over the left arm and leg and the left side of the abdomen Deep sensibility and the sense of position in the left extremities were intact There was a marked paresis of the left upper and lower extremities The deep tendon reflexes were present and equal bilaterally Babinski and Rossolimo signs were absent

Laboratory Examination—Spinal puncture revealed clear fluid under normal pressure The Pandy reaction was 2+ and there were 8 cells per cubic millimeter The blood and spinal fluid Wassermann reactions were negative The urine was normal

Course—The patient's condition rapidly grew worse On attempting to swallow he would choke and fluids would regurgitate through his nose The cornea of the right eye became

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1 Oppenheim Hermann Lehrbuch der Nervenkrankheiten ed 7 Berlin S Karger 2 1355 1923

2 Gowers W R A Manual of Diseases of the Nervous System 2 4 3 1893

3 LeFort and Lehmann quoted in Oppenheim H and Cassirer R Der Hirnabszess 1909 p 30

4 Statistics taken from the Department of Pathology of the Cook County Hospital Dr R H Jaffe director

more severely inflamed and superficial erosions developed. These were treated by a 1 per cent solution of atropine, which was instilled into the conjunctival sac, and the eye was kept protected with a shield. Crepitant rales developed in both lower pulmonary lobes and by May 14 bronchopneumonia set in. During all this time the condition was so critical that a detailed examination of the sensibility could not be made.

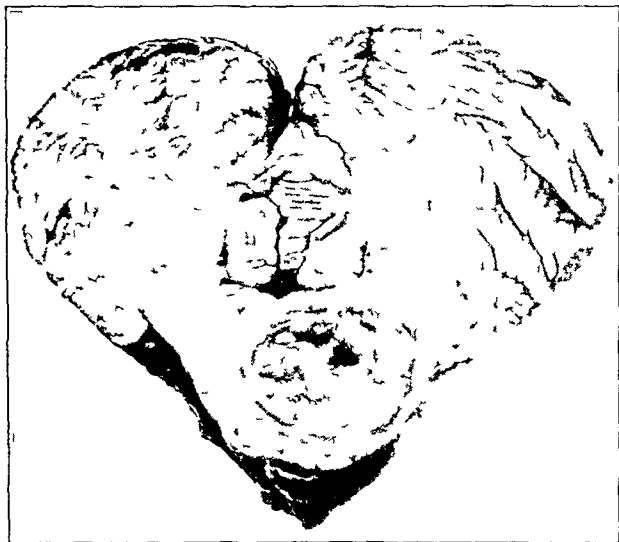


Fig 1 (case 1)—A pontile abscess of the base with invasion of the tegmentum

The patient died, May 14 six days after entrance into the hospital and approximately three weeks after the onset of his illness. The diagnosis was some destructive lesion probably a hemorrhage, in the right side of the pons varoli.

Necropsy (Dr R. H. Jaffe)—The anatomic diagnosis was abscess in the right side of the pons, confluent bronchopneumonia in all pulmonary lobes, anemia and parenchymatous degeneration of the liver and the kidneys, parenchymatous degeneration and atrophy of the myocardium, hypertrophy of the prostate gland, polyp of the transverse colon, atrophy and infectious softening of the spleen, iridocyclitis of the right eye.

Macroscopic Observations. The essential changes were found in the brain. It weighed 1,550 Gm. The leptomeninges over the cerebral hemispheres were slightly thickened and injected. The vessels at the base of the brain were thin walled and patent. The pons, especially on the right side, was enlarged, very soft and swollen. It measured 5 cm. in transverse diameter and 4 cm. in anteroposterior diameter. In the right brachium pontis there was a 14 by 10 mm. area of light purplish brown discoloration. The brain was sectioned after it had been fixed in a 10 per cent solution of formaldehyde. On the right side of the pons, extending for 7 mm. from the left of the midline, there was an oval cavity 25 by 20 mm. in diameter which was filled with thick, light yellowish green pus and was lined by a light purplish brown membrane about 0.5 mm. thick (fig 1). The lateral ventricles were distinctly dilated and the ependyma was smooth. The cortex and basal ganglia were light purplish brown. Other gross pathologic examinations disclosed that the middle ears and nasal sinuses were not affected and that the right eyelid was closed by dried pus. The cornea was cloudy and the pupil irregular in shape.

Microscopic Observations. The abscess in the region of the pons was separated from the brain parenchyma by a poorly developed young connective tissue capsule. The capsule consisted of three fairly distinct layers (fig 2). The innermost, adjacent to the pus, was composed of dense masses of gitter cells, the contents of which stained with sudan III. In sections stained by van Gieson's method there were discerned among and above these cells swollen fibrocytes mixed with fine purplish pink stained connective tissue fibers. This layer also contained polymorphonuclear leukocytes and some plasma cells. In the middle layer the most predominant features were dilated blood vessels and capillaries surrounded by a loose network of swollen fibrocytes, young connective tissue fibers and a few histiocytes.

plasma cells and gitter cells. The endothelial cells of the capillaries were swollen. The outer layer, bordering the cerebral parenchyma, was formed by somewhat denser connective tissue fibers and swollen fibrocytes. The latter layer likewise contained numerous plasma cells, macrophages and gitter cells. The lumen of the abscess was filled with debris of degenerated polymorphonuclear leukocytes and small lymphocytes. In Gram-Weigert stained sections, clumps of gram positive diplococci and short chained streptococci were seen in the necrotic material. The brain parenchyma in the vicinity of the abscess capsule appeared fairly normal, except for the congested blood vessels, which showed a marked proliferation of their adventitial layers and widening of their Virchow-Robin spaces (fig 2). These spaces were packed with large numbers of plasma cells. The ganglion cells, except for slight evidence of chromatolysis, were unchanged. There were no proliferative or degenerative changes in the glial elements. Perivascular infiltrations were confined to the brain tissue—in the immediate vicinity of the abscess—as the lower medulla oblongata and the brain stem in the region of the cerebral peduncles failed to show such changes.

The subarachnoid space, particularly at the base of the brain, was widened and infiltrated with numerous lymphocytes, plasma cells, macrophages and a few gitter cells (fig 3). The pial blood vessels were proliferated, their endothelial as well as adventitial cells were prominent. The epineurial and perineurial spaces about the cranial nerves, at the base of the brain, revealed a moderate cellular infiltration. The nerve roots themselves were essentially normal. The choroid plexus contained numerous small calcium concretions but was essentially normal.

A case of tegmental pontile abscess presented a syndrome of the Foville type: paralysis of the sixth and seventh nerves on the right side with contralateral hemiplegia and dissociated hemianesthesia. Of considerable interest was the presence of keratitis on the right side, in addition to the disturbances of sensibility. The Foville syndrome is rare and, as this and other



Fig 2 (case 1)—The upper half of the section contains the infiltrated blood vessels (D) in the brain tissue which is separated from the abscess (A) below by a capsule. B, zone of gitter cells. C, newly formed capillaries. Van Gieson stain. Reduced from a photomicrograph with a magnification of 100 diameters.

cases show denotes a tegmental lesion of the pons. Rare as such cases of pontile lesion are, those in which the clinical picture is that of a cerebral involvement, as in case 2, are still rarer.

CASE 2—History.—M. K., a white boy, aged 12 years, admitted to the Children's surgical ward of the Cook County Hospital, July 1, 1932, was in deep coma and his father stated

that the boy had had a discharging right ear for two and one-half months, severe headache and projectile vomiting for six weeks, paralysis of the left arm and leg for five weeks, and incontinence for three weeks. The complaints dated back to April 14, when the boy noticed a purulent discharge from the right ear. The ear drum was incised and drainage was good for a few days, after which it suddenly stopped. A septic temperature developed (from 101 to 102 F). In May the right mastoid was operated on but the headaches continued and were accompanied by projectile vomiting. The ear was opened a second time and, June 6, the right temporal region was operated on as a brain abscess was suspected. The operation did not improve the patient's condition, he was unable to feed himself and in the last week he had difficulty in swallowing.

The past history revealed that the patient had a tonsillectomy and adenoidectomy in 1928 and a radical mastoid operation (on the left side) in 1929.

Examination—The temperature was 101.8 F, the pulse rate was 94 and the respiration rate 32. A bandage covered the right side of the head. When removed, a linear wound was seen in the right temporal region. The wound was gaping and exuded a yellowish purulent material. Behind the right ear over the mastoid, was a linear depression 1.5 cm in depth and 1½ inches (3.8 cm) in length. The conjunctiva of the right eye was injected, and purulent material was present on the inner canthus. The pupils were equal and reacted to light. A yellowish purulent material exuded from the right ear. There were excoriations and herpes on the lips and the mouth was filled with thick, greenish white, purulent material. The left side of the chest lagged during respirations; it was dull to percussion, especially in its lower portions posteriorly. The breath sounds were harsh, with numerous moist rales. Examination of the heart and lungs was negative. There was a spastic paralysis of the left arm and leg with exaggeration of the biceps, triceps, patellar and achilles reflexes. There was a positive Babinski sign on the left side.

Laboratory Examination—A spinal puncture revealed a clear cerebrospinal fluid under normal pressure. The Pandy test was positive and there were 10 lymphocytes per cubic millimeter.

Course—The child died six and one-half hours after admission.

Necropsy (Dr R. H. Jaffe)—The anatomic diagnosis was abscess in the right half of the pons extending into the right brachium pontis with marked peripheral inflammatory reaction, edema of the brain and acute internal hydrocephalus. Radical operation of the right middle ear, mucopurulent otitis media of the right side, ancient thrombosis of the right lateral sinus of the dura mater, a trephine wound in the right temporal region with exposure of the sylvian fissure, bronchopneumonia in both lower and upper pulmonary lobes, suppurative tracheitis and bronchitis, subacute infectious softening of the spleen, parenchymatous degeneration of the myocardium with dilatation of the left ventricle and endocardial sclerosis and cloudy swelling of the kidneys.

Macroscopic Observations The essential changes were found in the head. In the right temporal region was an oval defect 3.5 cm long and 2 cm wide. The edges were dry and the floor exposed purplish gray, firm tissue. Behind the right ear was a 3 by 1 cm surgical wound extending to the bone. In the region of the defect in the right temporal region the dura mater was exposed and presented a 7 mm opening. The external surface of the dura about the opening was thickened and fibrotic. The internal surface was smooth. The right temporal lobe was loosely adherent to the dura in this region, and in the right temporal bone there was a 20 by 12 mm defect which was closed by a thin membrane. The external surface of the dura mater in this region was covered by an adherent firm light yellow membrane 4 mm in thickness.

The right lateral sinus was transformed into a firm dark purple red cord. The right middle ear was filled with a yellowish gray mucopurulent material. The left middle ear was unchanged.

The brain was greatly swollen, the leptomeninges were injected and the convolutions flattened. In the right sylvian fissure there was a 10 mm shallow defect. The right half of the pons was swollen measuring 5 by 4.5 by 2.5 cm in diameter. The swelling extended into the right brachium pontis. After having been fixed in formaldehyde the brain

was sectioned, and in the region of the base of the pons there was a roughly spherical mass 4 cm in diameter, containing a semiliquid mucopurulent material. It occupied the greater part of the right side of the pons and extended into the right brachium pontis. It was surrounded by a 1 mm purple-gray zone.

The ventricles were dilated and filled with an excessive amount of fluid. The brain substance including the basal ganglia was moist and light purple gray.

Microscopic Observations The abscess in the pons was surrounded by a fairly well developed connective tissue capsule. The innermost layer of the capsule was formed by fibroblasts and histiocytes and was infiltrated with numerous polymorphonuclear leukocytes and gutter cells. The outermost layer bordering on the brain parenchyma was also formed by dense masses of swollen fibroblasts and young connective tissue fibers among which were many plasma cells and histiocytes. Between the foregoing (external and internal) layers were numerous newly formed capillaries with markedly swollen endothelial cells. Surrounding these capillaries and extending about in



Fig. 3 (case 1)—Aseptic meningitis. M marked infiltrations of the meninges. P Purkinje cells. Toluidine blue satin. $\times 100$.

the form of a loose network were numerous proliferating and swollen fibroblasts, histiocytes and fairly dense accumulations of plasma cells which varied in size. Their cytoplasm was often in the form of an elongated body and occasionally contained two nuclei. Within the abscess were numerous small, homogeneous spherical bodies that stained pale blue with hematoxylin. In addition there were single well preserved pus cells and histiocytes. The brain tissue about the capsule was loosened and edematous. The Virchow-Robin spaces of the blood vessels were markedly dilated and filled with plasma cells.

The ganglion cells showed slight chromatolysis. The nerve fibers and glial elements showed no abnormal changes.

The right lateral sinus was covered within by a layer of coagulated blood into which young capillaries extended from the wall. The wall itself was unchanged.

Bacterioscopic examination of smears from the pontile abscess revealed numerous degenerated polymorphonuclear leukocytes and much cellular debris in which a few gram positive cocci were arranged in pairs and in short chains.

This case of pontile abscess thus showed clinically only a contralateral hemiplegia. It so much resembled

a cerebral lesion that the cortex was explored surgically. The location of the abscess in the pons was such that it precluded additional involvement of a cranial nerve, which is so essential in a correct diagnosis of a pontile lesion.

SUMMARY AND COMMENT

In both cases the abscess possessed a young connective tissue capsule and was associated with a nonsuppurative encephalitis in its immediate vicinity, mild degenerative ganglion cell changes and a marked meningitis.

Pathology—In our cases, the histopathologic changes of the poorly developed capsule surrounding the abscess, together with the changes in the adjacent brain tissue and the reactive phenomena in the subarachnoid space, were very similar to those previously reported by Kolpin,⁵ by Diamond and Bassoe⁶ and particularly by Hassin.⁷ The elements participating in the formation of the capsule were exclusively mesodermal. Although the capsule was immature, its differentiation into three layers was fairly evident. The inner layer was formed by dense swollen fibroblasts, occasional young connective tissue fibers and numerous gutter cells, macrophages, polymorphonuclear leukocytes and plasma cells. The middle layer contained numerous capillaries surrounded by fibroblasts, histiocytes, plasma cells and gutter cells. In the outer layer the fibroblasts were denser, with numerous young connective tissue fibers. Polymorphonuclear leukocytes were absent in the outer layer. The brain tissue about the abscess wall contained numerous blood vessels at a short distance above and below the abscess, their adventitial coats swollen and thickened and their perivascular spaces (Virchow-Robin) markedly infiltrated with plasma cells. The latter changes corresponded with those described as nonsuppurative encephalitis.

The increased cellularity found in the dilated subarachnoid space at the base of the brain is of particular interest and of great clinical significance.

The meningeal reaction following an aseptic irritation is exhibited by the presence of lymphocytes, macrophages, plasma cells and fibroblasts in the subarachnoid space. This was first termed by Ayer⁸ "aseptic meningitis." These changes are also similar to those produced experimentally by Weed⁹ and Essick,¹⁰ who injected laked blood and lamp black into the subarachnoid space. Hassin¹¹ likewise showed similar reactive changes in a case of acute manic state. In our case the presence in the subarachnoid space of gutter cells and the catabolic products in connection with the brain abscess were undoubtedly instrumental in producing these reactive phenomena. The experimental work of Weed,⁹ Forster¹² and others as well as the facts from human pathology¹³ conclusively proved that the flow of tissue fluid is from the Virchow-Robin spaces to the subarachnoid spaces

of the brain and cord. Carrying the gutter cells and waste substances into the subarachnoid space causes a reactive phenomenon in the meninges, which is known as aseptic meningitis.

Clinical and Anatomic Considerations—Some cases that have been reported in the literature as abscess in the pons were really those of tuberculoma (Abercrombie,¹⁴ Wendt¹⁵ and Tuley¹⁶). Other cases were metastatic pyogenic abscesses (H. Bercher,¹⁷ Cassirer,¹⁸ Bregman,¹⁸ Pollak¹⁹) or had an altogether doubtful and indefinite etiology (Forget,¹⁷ Meynert,¹⁷ May,⁹ Pitt,²¹ Lorenz²²). Concerning the etiology of the abscess in our first case there are several possibilities, since a detailed history was not available. If the infection of the eye can be considered primary, the abscess can be readily explained as a metastatic lesion. Direct extension from the eye to the pons may have occurred in analogy to the mode of spread of an encephalitic virus to the brain after inoculation²³ into the cornea. On the other hand, the conjunctivitis may have developed when the pontile abscess became large enough to involve first the seventh nerve, making it impossible to close the right eye completely, and later the nucleus of the trigeminal nerve on the right side, producing corneal anesthesia. The latter sequence of events was present in the pontile abscess reported by Cassirer.

The presence of pleocytosis in the cerebrospinal fluid in cases of brain abscess is self explanatory when one considers our discussion about aseptic meningitis. Woltman²⁴ has utilized the number of cells in the cerebrospinal fluid as an index of the degree of encapsulation (the fewer cells, the more mature the capsule). He also utilized the nature of the cells in determining whether the abscess was in the process of extension or was approaching the meninges or the ventricles. In these two conditions an appreciable number of neutrophilic leukocytes appeared.

A comparison of the cellular reaction in the subarachnoid space in a case of an eight year old abscess, as reported by Hassin,⁷ with the cellular reaction in our case (a young abscess) readily illustrates that the number of cells decreases the more localized and encapsulated the abscess is.

CONCLUSIONS

1 Pontile abscesses produce variable clinical pictures, depending on their localization.

2 The direction of the discharge of tissue fluids and toxic products from the region of the abscess into the subarachnoid space was indicated by the reactive phenomena about the perivascular spaces surrounding the abscess—nonsuppurative encephalitis—and the resulting secondary meningeal reactive changes—aseptic meningitis.

1853 West Polk Street

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TRANSMISSION OF SYPHILIS BY
BLOOD TRANSFUSION

A CASE OF ACUTE GUMMATOUS OSTEOMYELITIS

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One of the hazards of blood transfusion is the transmission of syphilis by this procedure. The first known case of syphilis thus acquired was Dade's, reported by Fordyce¹ in 1915. Morgan² collected a total of sixteen cases, including one of his own. Jones and his associates³ recently reported another case of "transfusion syphilis."

Hazen⁴ asserts that it is not improbable that 10 per cent of the adult male population of the United States is definitely syphilitic. In view of the wide popularity that blood transfusion enjoys in the practice of medicine today, it is fortunate that syphilis is not transmitted more frequently. This has been explained by Morgan² in his recent article. 1. There is considerable evidence to substantiate the view that blood from a donor with inactive (chronic) syphilis fails to transmit the disease to the recipient. 2. Brown and Pearce⁶ in experimental syphilis in rabbits have shown that spirochetes are present in the blood during the acute or active phase of the infection. With the disappearance of the active lesions, the spirochetes are no longer present in the blood and the blood loses its capacity to infect. Eberson and Engman⁷ have proved that in latent syphilis the reservoir for *Spirochaeta pallida* is chiefly lymphoid tissue and not the blood. Of the sixteen cases analyzed by Morgan,² the status of the syphilitic infection in the donors could be determined in eleven. Of these, ten presented acute primary or secondary syphilis, and the eleventh chronic syphilis complicating pregnancy. The virus has been shown to be present in the blood during pregnancy.

The cases that have been reported of syphilis acquired through the medium of blood transfusion have all shown the picture of a generalized secondary stage of the disease within one to three and one-half months after the transfusion.

The following case of "transfusion syphilis" is of especial interest. The initial manifestation of syphilis was an acute gummatous osteomyelitis. It is the first recorded instance of syphilis so acquired in which no evident secondary stage was present.

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REPORT OF CASE

History—L. S., a white woman, aged 29, admitted to the Jewish Hospital, May 30, 1934, complained of headache of three weeks duration. She had measles, whooping cough and mumps as a child; the tonsils and adenoids were removed in 1926. Her parents were alive and well and, as far as she knew, her two brothers were in good health. Catamenia was for five days at intervals of twenty-eight days.

She was married in 1931 and became pregnant a year later. Toward the latter months of pregnancy albuminuria, hypertension and headaches developed. Placenta praevia complicated the labor and a stillborn child was delivered by forceps. During her second pregnancy she felt well, albuminuria or hypertension did not develop. At term, after thirty-two hours of labor, a preoperative transfusion was given and twins were delivered by cesarean section, Feb. 2, 1934. Her brother acted as the donor. Her convalescence was uneventful.

April 1, 1934, eight weeks after delivery, she complained of pain in the chest and both shoulders. The pain became so intense that morphine was required for relief. Within forty-eight hours a tender swelling, the size of an olive, appeared over the middle of the sternum. The pain and swelling continued unchanged for several days and then gradually abated, a residual soreness persisting. Four weeks later (May 1) she

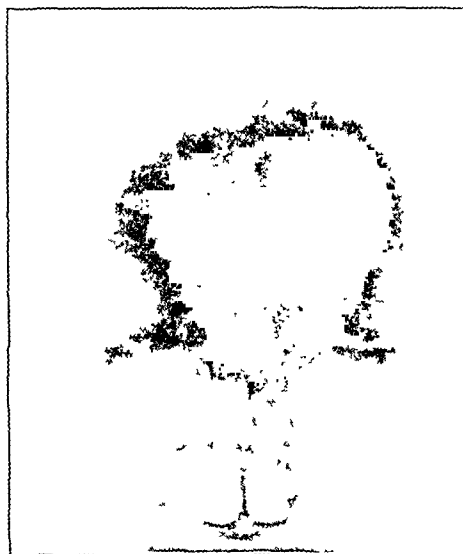


Fig. 1—Roentgen appearance of skull showing areas of rarefaction.

complained of intense pain over the entire skull. Within a few days a hard tender swelling, the size of an olive, appeared on each side of the forehead. Both eyes appeared to be protruding. The tumors and headache persisted for a week and then gradually subsided, leaving a residual soreness. A week before admission (May 23) intense pain preceded by twenty-four hours the appearance of three small nodules, one over the left parietal region and two over the middle of the forehead.

The patient positively did not show by symptoms and/or signs of the presence of any antecedent skin or mucous membrane lesions.

Physical Examination—The patient was of average well proportioned development. Palpation of the skull revealed points of tenderness conforming to her localization of previous swellings. Three small subcutaneous swellings, each the size of a dime (18 mm) were noted: one on the forehead just above the nose, a second directly above this at the hairline, and a third over the left parietal region. The nodules were well circumscribed, exquisitely tender and soft and appeared to be attached to the underlying bone. The skin over the nodules was not attached. The pupils were equal and reacted to light and in accommodation; consensual reflexes were present. The nasal margin of the right disk was blurred, the left disk was blurred and appeared slightly raised. No hemorrhages or exudates were seen.

The sternum showed a point of tenderness over the lower end of the gladiolus. Palpation of other bones revealed nothing of note.

The heart and lungs were normal. The abdominal organs could not be palpated. Neurologic survey revealed no additional pathologic changes.

The impression was that this case was probably one of gummatous periosteal tumefactions involving the skull and sternum.



Fig 2—Roentgen appearance of skull showing areas of rarefaction

Course in the Hospital—Three days after admission (June 2) the patient complained of intense pain over the right frontal region. The pain was worse the next day, and a swelling the size of a small olive appeared over the right side of the forehead. It was well circumscribed and was attached to the underlying bone, and the skin over it was freely movable. The headache and swelling persisted for five days and then gradually subsided. The temperature and pulse were normal throughout her stay in the hospital.

Laboratory Examinations—The blood Wassermann and Kahn tests, May 31 and June 2, were four plus.

June 2, 20 cc of clear spinal fluid was removed under 100 mm of water pressure. The Queckenstedt test was negative. No cells were noted. Reducing substance was 55 mg per hundred cubic centimeters. The Wassermann reaction was negative. There was no reduction of colloidal gold. Bacteriologic study gave negative results.

The urine, examined several times, showed no albumin, sugar or pathologic cellular elements. In the concentration test the volume excreted ranged from 130 to 280 cc, the specific gravity ranged from 1.010 to 1.020. Chemical examination of the blood, June 1, revealed sugar, 117 mg per hundred cubic centimeters, urea 11 mg, creatinine 15 mg, uric acid, 62 mg, carbon dioxide combining power, 52.6 volumes per cent, calcium 10.4 mg per hundred cubic centimeters, phosphorus 4 mg.

A blood count showed red blood cells 4,800,000, white blood cells 6,800, with polymorphonuclear leukocytes 54 per cent, lymphocytes 46 per cent and hemoglobin 65 per cent (Sahli).

The basal metabolic rate was 0.

An electrocardiogram was within normal limits.

Roentgen Examinations—The cardiac shadow was within normal limits and the aortic shadow was normal. The lungs showed no pathologic changes.

Over the left parietal region of the skull and over the middle of the frontal bone irregular areas of rarefaction were present. The diagnosis was gummatous infiltration (figs 1 and 2).

Roentgenograms of the sternum showed an area of rarefaction of the lower end of the gladiolus. The diagnosis was gummatous infiltration (fig 3). The pelvis showed no pathologic changes and both the right and left tibias were normal.

Subsequent Course—Treatment with bismuth compounds, iodides and arsphenamine was instituted in the hospital and was continued by one of us (A. N. S.) after her discharge from the hospital, June 18. A spinal tap was again done October 16, no pathologic changes were noted. The blood Wassermann and

Kahn tests were reported negative, Oct 16, 1934, and plus minus, Sept 10, 1935. Roentgen examination on September 11 showed that the areas of rarefaction previously reported had been completely filled in.

Blood Wassermann and Kahn tests were done on the twins and the patient's husband and were reported negative, Aug 1, 1934, and Sept 10, 1935. The donor, the patient's brother, was examined as soon as the diagnosis was established. There was no evidence of primary or secondary syphilis. Blood Wassermann and Kahn tests were reported four plus on June 20, 1934 and Sept 10, 1935.

COMMENT

The patient was intelligent and cooperative. She was positive in her assertion that neither symptoms nor signs suggestive of secondary syphilis preceded the onset of her illness, nor could she recall anything pertinent in her past history. It is an accepted fact that latent syphilis can be reactivated by pregnancy. Schamberg and Wright⁸ state that every woman who has had active syphilis before or during pregnancy, and who has received no treatment or inadequate treatment, is liable to give birth to a syphilitic child, infection taking place through the placenta. Ahmkvist⁹ reports that in twenty-seven of twenty-eight infants born to syphilitic mothers, the disease became manifest in from fifteen days to eight months after birth. Thus the absence of signs of syphilis in the twins and the negative Wassermann reactions on their blood may be interpreted as evidence that the disease was not present in the mother during her pregnancy.

The patient's brother, who had acted as donor, admitted that he was exposed to syphilis in 1930, when he had been living with a woman who had syphilis. A Wassermann test was done at that time and was reported negative. He stated that there had not been any primary or secondary manifestations of syphilis.

He was examined immediately after the diagnosis was established (June 1934) and several times later, and no lesions indicative of syphilis were discernible. Blood Wassermann and Kahn tests were reported positive, June 20, 1934, and Sept 10, 1935.

Syphilis of the bone may occur early as well as late in the disease. According to Schamberg and Wright⁸ the spirochete early in the course of syphilis tends to invade the bone marrow. The specific gummatous foci appear most frequently in the periosteum.¹⁰ The gummatous overgrowth follows the vessels as they enter the skull into the bones from the periosteum. When the bone is involved as well as the periosteum, Kaufmann describes the lesion as "acute gummatous osteomyelitis." The



Fig 3—Roentgenogram of sternum showing an area of rarefaction of the lower end of the gladiolus

⁸ Schamberg J. F. and Wright C. S. *Treatment of Syphilis* New York, D. Appleton & Co. 1932.
⁹ Ahmkvist J. *Prophylaxis of Congenital Syphilis* Acta dermat 5: 303-348, 1924.
¹⁰ Kaufmann Edward. *Pathology* Philadelphia P. Blakiston's Son & Co. 1929.

roof of the skull the sternum, the phalanges and the tibiae are most frequently involved

This patient thus represents a case in which acute gummatous osteomyelitis was the initial lesion of syphilis transmitted by a blood transfusion

SUMMARY

1 In a case of acute gummatous osteomyelitis, syphilis was acquired through the medium of a blood transfusion. There was no evidence of the secondary manifestations of syphilis

2 The blood donor was not in the active phase of syphilis at the time of the transfusion, nor has he subsequently shown active lesions. Blood Wassermann and Kahn tests have repeatedly been reported positive
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COCCIC INFECTIONS OF THE RENAL CORTEX

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It is surprisingly strange how slowly the medical profession is coming to appreciate the importance of cortical kidney infection due to the various types of cocci, as well as the various clinical pictures of this condition and its very definite relation to perinephritis, to perinephric abscess and probably to chronic sclerosing perinephritis. In this paper I shall analyze some of my observations, which I have attempted to describe in part previously and which corroborate much that is scattered here and there in the literature

Though the clinical picture presented by these cortical coccic infections in previously normal kidneys may vary from the most acute disease to a more or less chronic one, usually the diagnosis can be made and proper therapy instituted before irreparable harm to the kidney or to the patient is done. There is a distinct and definite difference between these cases and the bacillary infections: colon, proteus, pyocyaneus, Friedlander, and so on.¹ Pyuria is a characteristic of these cases, while in the coccic cortical abscesses the urine is usually clear. In the literature, unfortunately, the two types are frequently combined and described together, making for great confusion. Rarely coccic infections and bacillary infections occur together and make the diagnosis much more difficult. However, such cortical infection, whether coccic or bacillary, is usually superimposed on a previously diseased kidney, infected by hydronephrosis, pyonephrosis or calculous pyelonephritis and more rarely on tuberculosis and on polycystic or neoplastic disease. This type of cortical abscess, as opposed to the metastatic coccic abscesses in previously healthy kidneys, only occasionally leads to suppuration in the so called perinephrium

It seems to me that too much emphasis has been placed on the peracute, fulminating unilateral, septic hematogenous infections, which in my experience have been encountered infrequently compared with the acute embolic abscesses, which also are often associated with positive blood cultures. The former group are often a part of a general, overwhelming sepsis and though the symptoms may be unilateral, both kidneys, the lungs and other organs frequently show embolic abscesses. If symptoms and signs are limited to one side, early

removal of the diseased kidney may effect a cure, whereas in the other group primary nephrectomy is rarely indicated. At the opposite end of the scale, there may be a mild and very transitory group with fever, pain and tenderness lasting a short time in which cocci have been found on smears from the centrifugated urine (Crabtree,³ Cabot,⁴ Nesbit⁵). These cases are still *sub judice* and may belong to the group of non-suppurating, diffuse staphylococcic nephritis. "Almost all patients recover, usually undiagnosed."⁶ Between these two extremes there is a large group of cases of cortical abscess and cortical carbuncle, which rarely get well without incision, drainage and decapsulation or nephrectomy, and which underlie almost all cases of perinephritic suppuration

Cortical abscess of coccic origin, not caused by direct injury, is always secondary or perhaps tertiary to a focus of infection or abrasion, perhaps weeks or months earlier and often forgotten by the patient. The infection may be in the skin (furuncle, abscess, carbuncle, paronychia, infected wounds, abscess of prostate or testes, erysipelas) or a gum boil or infected tooth and rarely to a systemic infection without or with evident skin suppuration. It may also be due to subacute or chronic osteomyelitis or to an infection of the upper respiratory tract, including tonsillitis

There has always been a certain amount of mystery as to how the coccic emboli or the microscopic mass of cocci arrive at the kidney and lodge in the small end arteries. Whether they traverse a patent foramen ovale (a not uncommon anatomic defect) and thus reach the left side of the heart or whether they are small enough to traverse the pulmonary capillaries has always been conjectural. The only thing that is certain from clinical observation is that the coccic emboli finally reach the kidney destination

Within recent years a publication from the Hamburg Pathologic Institute, read before the local society but as yet unconfirmed as far as I know, claims that, in all these cases of transitory or protracted sepsis with bacteremia, almost regularly a thrombophlebitis was demonstrable in the pulmonary circuit and that from these secondary foci tertiary foci develop in other parts. If this conception is verified, patients with cortical kidney abscesses that are adequately drained and still maintain a bacteremia may in turn, as the pulmonary thrombophlebitis takes care of itself, lead to further or quaternary metastases due to a thrombophlebitis in one of the cortical veins or to a thrombophlebitis in the main renal vein. It would seem, therefore, that the routes of the infecting agent may be rather difficult and involved. If the embolus lodges in the glomerular vessels or in one of the terminal branches of the arteries under the capsule, one or more localized abscesses are liable to develop. Apparently this process may be peracute or subacute, depending on the virulence of the organism and the patient's ability to combat the invader. In other cases, if the embolus lodges in a vessel well below the cortex at a bifurcation, a definite infarction develops, involving a typical conical area of cortex, which is liable to break down if the suppuration is not controlled and lead to innumerable small abscesses in the infarcted area, thus producing the picture of

3 Crabtree, E. G. Surg. Gynec. & Obst. 22: 221 (Feb.) 1916

4 Cabot, Hugh. Surg. Gynec. & Obst. 23: 495 (Nov.) 1916

5 Nesbit, R. M. Acute Staphylococcal Infections of the Kidney

J. A. M. A. 98: 709 (Feb. 27) 1932

6 Hinman, Frank. Principles and Practice of Urology. Philadelphia

W. B. Saunders Company 1935 p. 571

7 In the first series thirty-four out of sixty-one cases in the second series thirty-two out of forty-three cases according to the patients' histories

carbuncle of the kidney. There can be no doubt from innumerable observations that many of the former group of cases may resolve even without perforation into the caliceal system as one frequently sees evidence at operation of such a process particularly in the consolidated perinephritic fat. On the other hand, it is

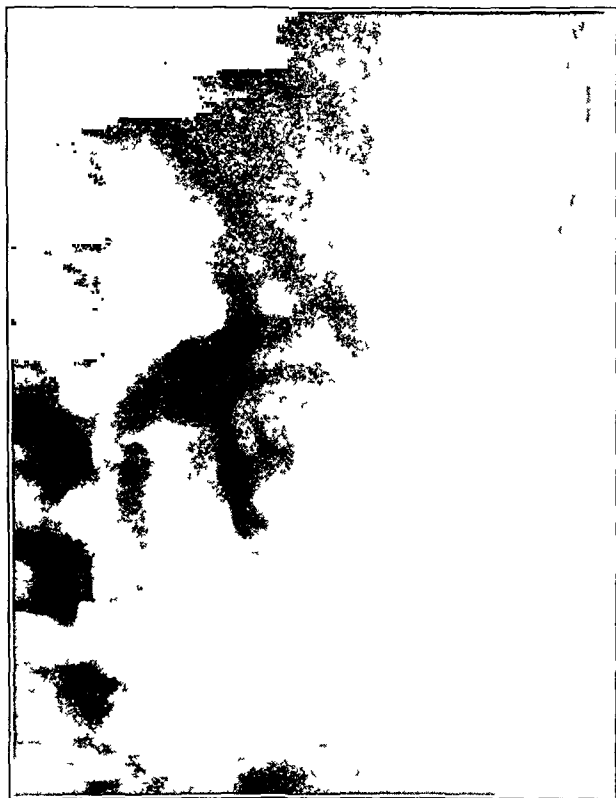


Fig 1—Cortical abscess of anterior surface, curvature of the spine. Excretory urogram shows separation between second and third calices, irregular contour of kidney cortex, obliteration of the psoas. W. M. aged 13 years. Two weeks right lower quadrant pain. No pus in urine preoperatively. Operation revealed cortical abscess of anterior surface, subcapsular abscess. *Staphylococcus aureus* on culture. Negative blood culture and urine culture.

much less common and probably rarely seen in the carbuncular involvement of the kidney.

In my experience the great majority of both these types of kidney infection has been progressive and has finally led to involvement of the perinephric fat. If such cortical foci remain under the fibrous capsule of the kidney, as has been repeatedly seen in my cases, the perinephric fat is liable to be edematous at times adherent to the fibrous capsule over the abscess, and may even go on to frank suppuration, infected through the lymphatics or blood vessels which, though few in number, seem to connect the kidney cortex and capsule with the perinephric fat. If, on the other hand, such a cortical abscess is seen in the latter stage, it may have perforated the capsule of the kidney, as it usually does, and present a frank, massive contamination with suppuration in the perinephrium. A great deal of confusion has been caused in the interpretation of this pathologic process and in the origin of perinephric abscess by virtue of the fact that at operation in advanced cases of perinephric suppuration one may not recognize any evidence of kidney involvement. The cortical abscess, having ruptured and drained into the perinephric space rapidly heals so that what was a cavity in the cortex fills in with granulation tissue and on palpation the original crater or abscess cavity is flush

with the adjacent kidney cortex and not recognizable to the palpating finger.

I have been able to see, in the many operations for this condition, every stage of the pathologic process, e. g., cases in which the perinephric tissue was edematous only because of an underlying cortical abscess or abscesses, in which these cortical abscesses were uncovered only by decapsulating the kidney in situ; other cases in which a large perinephric abscess had developed and communicated with a definite crater or abscess in the kidney cortex, and others again in which there was no visible or palpable evidence of cortical abscess underlying the perinephric abscess. This last group of cases usually are of long standing and were more common when surgical therapy was delayed. Since earlier recognition of these cases, the last group has been rarely seen. In fact, in my last twenty cases decapsulation demonstrated the cortical kidney abscess in seventeen cases. In other cases the typical crater of the cortical abscess, which had perforated the capsule, was readily palpated. In other cases a superficial area of granulating tissue flush with the surface of the convexity of the kidney was all that was left to indicate the origin of the perinephric abscess. Untreated these perinephric abscesses, as is well known, may rupture into the paranephric space and thus drain down along the lumbar gutter toward the pelvis, appearing at the various rings in the inguinal region. They may perforate upward into the subdiaphragmatic space and thus into the pleura, or anteriorly into the bowel or perito-

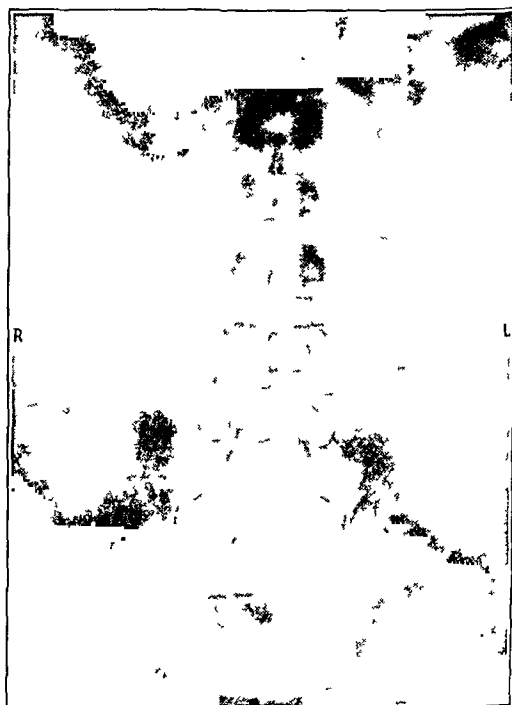


Fig 2—Anterior cortical abscess. Pyelogram showing pushing apart of upper and second calices. S. F. aged 32. Four months furunculosis of lumbosacral region. One month chills and fever. No blood culture or urine culture. Physical examination showed tenderness over McBurney's point. At operation slightest edema lower pole. After decapsulation anterior surface abscess found, rest of kidney normal. Cultures of pus showed *Staphylococcus aureus*.

neum or posteriorly through the musculature under the skin in the lumbar region. Fortunately these extensive abscesses in the perinephric fat are rarely seen nowadays, though they were common thirty years ago. It must be admitted that involvement of the perinephric

fat may also arise from intrinsic disease of the kidney and pelvis, as seen in pyonephrosis, stones in the kidney, tuberculosis and the like but in these conditions the underlying disease usually dominates the picture and this type of complication is relatively rare

Perforations of the bowel and appendix, as well as suppuration in the female pelvis and vertebral suppuration, may lead to such abscesses in the paranephric fat and perhaps also in the perinephric fat. This surely is a comparatively rare occurrence and it is difficult to understand the statement by Ombredanne⁸ that perinephric abscess in children is usually the result of appendicitis. Gerota's fascia is probably rarely penetrated by these abscesses, which lie behind this fascial plane in more or less direct communication with the retroperitoneal space

The perinephric fat is undoubtedly in intimate lymphatic and vascular contact with the kidney and it is claimed that there is a separate arterial supply derived from the renal artery which goes to the perinephrium ("twigs," Quain). In view of this anatomic relation, a number of recent writers (Vermooten,⁹ Bugbee¹⁰) have reemphasized the possibility and probable frequency of perinephric suppuration produced by embolic infection of the perinephric fat. It is well known that the perinephric fat is remarkably avascular, despite this possible blood supply, and operating room observations have shown that this method of infection of the perinephric fat leading to suppuration must be a great rarity, as emphasized in years past by such experienced surgeons as Israel¹¹ and Jordan¹² and by many others, as well as by my own extensive experience.¹ While it cannot be denied, in view of the anatomic studies, that there is a possibility of such an infection of the perinephrium, the evidence of this method of infection is to date no more than flimsy

In view of the pathologic condition as just described and the frequent suppuration in the perinephric fat associated with cortical kidney abscess in previously healthy kidneys, the bacteriology of the pus in both the cortical abscess and the perinephric tissue almost regularly shows the same organism, namely, *Staphylococcus aureus*. Occasionally, in a few of the cases the streptococcus has been isolated, and in a few rare cases *Staphylococcus albus*. In one case in which the latter organism was isolated, it was isolated also in the blood stream and caused the patient's death. In cortical abscess and perinephric abscess in previously diseased kidneys, on the other hand, *Staphylococcus aureus* has been an unusual finding, whereas colon bacilli, proteus, pyocyanus, the Friedlander bacillus and lactis-aerogenes have been identified. Usually the same organism has been identified in the voided urine, and at times, when cystoscopy and ureteral catheterization have been carried out, these bacilli have been found only on the side of definite disease. The culture from the urine in typical coccic cortical infections in previously healthy kidneys may fail to demonstrate *Staphylococcus aureus*. In twenty-eight cases so studied in my second series, eleven gave positive results. In some of these cases, colon bacilli seem to overgrow the cocci. There has been no systematic attempt made to examine the smears

of the centrifugated urine from the diseased kidney reliance having been placed mainly on cultural examinations. In a considerable number of these cases, blood cultures have been made and *Staphylococcus aureus* or *Streptococcus anhaemolyticus* and haemolyticus have been grown. In the bacillary cases there have also been repeatedly positive blood cultures. In both groups of blood cultures invasion of the blood stream is usually temporary, and despite positive blood cultures, if proper treatment is carried out the sepsis disappears and the blood stream becomes sterile

REVIEW OF SIXTY-ONE CASES

The following observations are based on a review of sixty-one cases treated prior to 1926 and reported by Dr. Paul Aschner,¹⁴ and forty-three more recent cases in which operation was performed.¹⁵ In this last group, some new points of view have been developed, while in general most of the fundamental observations in our

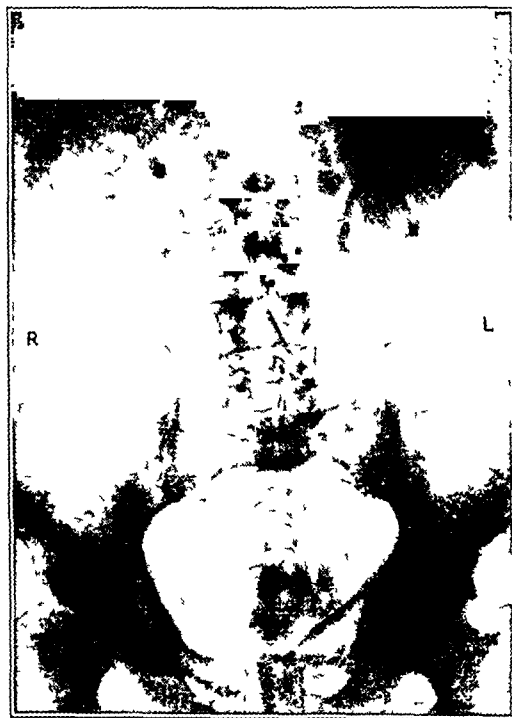


Fig 3—Anterior cortical kidney abscess. Excretory urogram, middle calices not filled. S. C. aged 48. Nine days symptoms left upper quadrant left loin pain. Etiologic factor hemorrhoidectomy two months previously required catheterization after operation resulted in nocturia, frequency, no pus in urine. Two positive blood cultures *Staphylococcus aureus* *Staphylococcus albus* *Streptococcus haemolyticus*. Operation showed cortical abscesses anterior surface perinephritis edematous fat. Uneventful recovery.

service, as published by Aschner, have been confirmed. Males, as is to be expected, are more frequently involved (thirty-one to twelve), and the majority of cases fall between the ages of 20 and 50. In forty-three cases, thirty-eight showed *Staphylococcus aureus* in cultures of pus, three showing a mixed infection. In thirty-two cases there were perinephritis and perinephric abscess, as well as cortical abscesses. In nine cases the kidney was not exposed or visualized according to the records. In thirteen cases the cortical abscess was anteroventral. If this location of the abscess, almost 30 per cent of the last forty-three carefully observed patients holds for other series, one can well understand

⁸ Ombredanne, Louis. *Chirurgie infantile*. Paris: Masson & Cie, 1923.

⁹ Vermooten V. D. *J. Urol.* 30: 181 (Aug.) 1933.

¹⁰ Bugbee H. G. *Am. J. Surg.* 26: 255 (Nov.) 1934.

¹¹ Israel. *Nieren Krankheiten*. Berlin: August Hirschwald, 1901.

¹² Jordan. *Chirurgie der Niere und des Harnleiters*. Leipzig: Georg Thieme, 1923.

¹³ Jordan. *XXXIII Kongress Deutschen Gesellschaft für Chirurgie*. Zentralbl. f. Chir. 1899, p. 152.

¹⁴ Beer, Edwin and Hyman Abraham. *Diseases of the Urinary Tract in Children*. New York: Paul B. Hoeber, Inc., 1930, p. 63.

¹⁴ Aschner P. W. *Am. J. M. Sc.* 172: 63 (July) 1926.

¹⁵ In addition there were five patients who presented rather typical symptoms and got well without surgery as well as two patients who died too toxic for surgery.

the failure to appreciate the intimate relationship between the cortical kidney suppuration and perinephric abscess. Without decapsulation, these abscesses would have been regularly missed. Incision and drainage alone of the perinephric abscess possibly would have sacrificed the involved kidney, surely protracted the convalescence and perhaps even have lost the patient. In a study of the blood cultures, there were seven staphylococcemias out of a total of twenty-six studied in this manner. Only a fraction of the cases were studied from this standpoint and usually only the very sick or persistent and puzzling cases.

The clinical picture of metastatic, cortical, coccic infection has become much clearer since physicians and surgeons have been on the lookout for these cases. As Linder¹⁶ has recently written, the general surgeon sees more of these cases than the urologist, as they are referred to the general surgeon by the medical men



Fig. 4—Excretory urogram showing good function of both kidneys. Diffuse shadow in left lumbar region obliterating margin of psoas muscle and curvature of spine toward the opposite side where psoas margin is clearly seen. S. M. aged 16 years. Antecedent skin infection, cortical abscess of left kidney, edema of perinephric fat.

under the impression that they are acute abdominal conditions. In fact, it has been my experience as a general surgeon that the urologist often fails to recognize this condition, probably owing to lack of extensive experience. During recent years particularly, the clinical picture of these cases, coming as they do to the surgeon earlier, is totally different from what it was some thirty years ago, when these patients presented themselves with bulging tender, lumbar abscesses, often associated with psoas contractions, simulating either Pott's disease of the spine or hip disease. At the beginning of the century the orthopedic surgeon frequently described the end result of these cases, as they were referred to him for the foregoing symptoms, before the correct diagnosis was made. Some few cases still

present a picture that is quite baffling, and only a tentative diagnosis, followed by an exploratory operation, helps to clarify the underlying pathologic condition.¹

As the clinical picture may vary from a very acute, fulminating process with chill or chills, high temperature and pain in the back to that of a subacute or chronic septic condition, it is fair to say that the clinical picture presented by this type of infection may be protean in character. Fortunately in the great majority of cases the picture is rather typical and therefore easily recognized. In the minority of cases the obscure picture and the bizarre behavior of the patient had led to many late diagnoses, in some cases a year or more following the beginning of the infection. It can readily be understood why the picture varies. In all probability this depends not only on the degree of virulence of *Staphylococcus aureus* and the resistance of the patient but also on the local pathologic condition and the progress of the disease. While the pus focus is under the kidney fibrous capsule and therefore under considerable tension, the symptoms may be marked and striking, and as the cortical abscess ruptures into the perinephrium and in turn localizes in this fatty tissue, symptoms may subside temporarily, only to become more definite as tension develops in the perinephric space. Again when the perinephric abscess breaks through the fascia of Gerota tension disappears and many of the symptoms temporarily abate. Then again as pus ruptures downward and descends between the two leaves of Gerota's fascia toward the pelvis, the symptoms may subside until the tissue reaction reencloses the purulent accumulation. Some few cases may rupture into the caliceal system or the pelvis and drain off satisfactorily, with disappearance of symptoms.

In view of these peculiar developments, one often gets the impression that the patient is definitely getting well spontaneously, which may take place, but innumerable cases of this sort have been seen by other observers as well as by myself, in which finally, despite apparent repeated periods of convalescence and improvement operation became necessary and disclosed in addition to the perinephric abscess further change, either a cortical abscess or carbuncle of the corresponding kidney.

The characteristic symptoms of this disease are a rise in temperature with or without chill, with pain in one or both lumbar regions. On physical examination the kidney usually cannot be felt, and if palpable strange to say, it may be movable. There is regularly a definite jar or "punch" tenderness over the involved kidney. If the elevation of temperature continues, there is a progressive, often impressive, loss of weight and a progressive anemia. The patient becomes pasty looking and suggests sepsis. Leukocytosis is almost always present while the patient has fever. The examination of the urine at this stage may show little or nothing. There may be some red blood cells²⁰ in the voided urine, some leukocytes or a trace of albumin as a result of the febrile reaction, possibly from the affected kidney, possibly from the second kidney. In view of the fact that the cortex is involved in these cases it is not surprising that the urine is clear and practically negative macroscopically and microscopically. Moreover, the functional tests of the kidney and the blood

17 Though the clinical picture may seem clear and typical exploration may expose a paranephric abscess due to vertebral osteomyelitis, metastatic psoas abscess, pericholecystic abscess, pericolic suppurative due to carcinoma and the like, very rarely a subcapsular hemorrhage caused by periarteritis nodosa (Dantes¹⁸, Wever¹⁹) and occasionally no pathologic condition at all.

18 Dantes, J. Mount Sinai Hospital New York 2: 1-0, 1933.

19 Wever, G. K. and Perry, Isabella H. *Periarteritis Nodosa* J. A. M. A. 104: 1390 (April 20) 1935.

20 Gross hematuria is unusual.

examination for retention products are liable to be negative. Cystoscopy in these cases should be carried out only after a preliminary roentgen examination. The chief value of cystoscopy is to demonstrate that both ureters are patent and that the patient is not suffering from a completely blocked kidney. In practically all these cases at their inception it is essential to rule out an acute, infected, completely obstructed hydronephrosis.

The roentgen examination, as pointed out by a number of writers (B. Alexander,²¹ B. Revecz,²¹ H. Laurell,²¹ J. R. Carty,²¹ L. Friedman,²¹ P. Lipsett²¹), in the flat plate may frequently help clarify the diagnosis by demonstrating a curvature of the spine away from the area of pain and tenderness and a partial or complete obliteration of the sharp edge of the corresponding psoas muscle. In eighteen cases out of twenty-nine these corroborative signs were noted.

In 1928 I²² called attention to the fact that obliteration of the psoas margin and curvature of the spine away from the painful or tender kidney in the absence of an obstruction of the ureter leading to hydronephrosis and in the presence of macroscopically clear urine was a corroborative sign of perinephric suppuration. Since then I have noticed this sign repeatedly in cortical kidney abscess without frank perinephric suppuration, caused in part by edema in the perinephric fat. This analysis of the situation presented in the ordinary flat x-ray plate places the value of such an examination on a much firmer basis than do the observations of other writers.

It is amusing to see cases reported with flat roentgenograms in which the legend reads "There is no curvature of the spine away from the involved kidney," when even in the reproduction it takes no particular keenness to recognize such a curvature. As similar pictures may be induced by an obstructed, infected hydronephrosis, a cystoscopy is essential to exclude this condition. In some obscure cases the flat roentgenograms of the kidney area may show a gradual enlargement of the kidney shadow, which in the absence of an obstruction in the ureter can only mean that while under observation the kidney has been gradually more and more involved, producing an increased shadow. Occasionally in the roentgenogram one may see an irregularity or hump corresponding to a suppurative process either under the capsule or in the perinephrium, which also may help in the more chronic cases in elucidating the clinical picture. Actual displacements of the kidney have been described, but they must be very rare. Some authors believe that they can diagnose cortical abscesses by variations in the density of the kidney shadow, which is more than I have been able to do.

Excretory urography and retrograde pyelograms have repeatedly helped out in the diagnosis of some of the subacute and chronic cases by demonstrating either a pushing apart of the calices above and below the abscess or by demonstrating, particularly in the carbuncular cases, compression phenomena involving the pelvis and two or more calices simulating neoplasm of the kidney (ten cases out of sixteen). These changes in the roentgenograms are seen not infrequently in cortical abscess, even before frank pus develops in the perinephric space. Another x-ray observation, especially in upper pole involvement, is a gradual pushing up of the diaphragm or fixation of the diaphragm due to local edema or exudate. All in all, the value of the roentgen examination in these cases has been very much underestimated,

as evidence of trouble is demonstrable in this way in more than half the cases.

In a moderate number of cases there may be radiating pain along the genitocrural nerve and some mild urinary frequency. Rarely there are colicky pains. Many cases at the inception present no symptoms or definite signs referable to renal disorders and resemble general infections, such as influenza, typhoid or even sepsis, some suggest pneumonia, and others in which there is pain on respiration are mistaken for pleurisy. If the cortical abscess is in the upper pole, the latter clinical pictures are readily simulated.

In some of the subacute or chronic cases in which the temperature has gradually dropped, and in which local pain and tenderness have disappeared, I observed some years ago that it might be possible to activate the quiescent abscess with the use of ordinary Staphylococcus aureus vaccine. This procedure was based on clinical observation of cases of bilateral cortical abscess in which the patient at the time of the first operation had symptoms localized to one side and shortly thereafter developed symptoms referable to the second kidney. At the exposure of the second kidney, the same pathologic condition that had been disclosed at the first operation was found. Apparently the condition had existed the same length of time, and the absorption following the first operation had activated the foci in the second kidney. A number of cases in which vaccination with stock vaccine of Staphylococcus aureus has been carried out seemed to respond with fever, pain and development of local tenderness. In view of the fact that this did not happen regularly, it is only fair to say that the apparent activation may have been accidental, though it seemed to be a direct result of the injection. I believe that in obscure cases this should be attempted. Intercurrent infections of the upper respiratory tract, as well as skin infections, may also reactivate quiescent coccic foci in the kidney, which supports the foregoing observations.

The clinical pictures of the typical, acute cases, whether associated with bacteremia or not, should be recognized and should be treated surgically by incision, drainage and decapsulation²³ in situ. If this is carried out, the wound should not be sewed tightly, as it is always liable to be infected from the staphylococcus pus. Adequate rubber dam in front and behind the decapsulated kidney should be left in place for drainage and usually, if the abscesses are thoroughly drained and do not involve the whole kidney, decapsulation is curative. Only two cases eventually required nephrectomy. Whereas with a clear cut clinical picture—persisting fever, jar tenderness—operation is indicated, should the symptoms abate and suggest spontaneous resolution, a watchful waiting policy is indicated.

Variations in the clinical picture from the simple, more or less regular course, deserve special mention, and I shall take the liberty of describing a number of obscure cases rather fully to illustrate the perplexity that can be produced by this type of metastatic, cortical, coccic kidney abscess. Before describing these unusual cases, it must be emphasized that there is a considerable group of cortical abscesses which involve the anterior surface of the kidney (thirteen cases out of forty-three), which may eventually rupture into the anterior perinephric space and thence rarely into the peritoneal cavity, and which appear as acute abdominal disease, often suggesting either a gallbladder infection, appendi-

²¹ Cited by Beer and Hyman²² pp. 63-84.

²² Beer, Edwin. Roentgenographic Evidence of Perinephric Abscess. J. A. M. A. 90: 1375 (April 28) 1928.

²³ In very long standing neglected cases of perinephric abscess in which the kidney is thoroughly bound down and encased decapsulation in situ may be unwise, unnecessary or even impossible.

citis, acute pancreatitis, occasionally liver abscesses or even a visceral perforation. Sometimes lower pole cortical abscesses will produce the same type of irritation of the peritoneum, and, if on the patient's right side, the aforementioned clinical pictures may be simulated. On the left side, fortunately, this confusion is rare, though at times antereal suppuration has led to the mistaken diagnosis of a colonic tumor, which may have to be excluded by a barium sulfate enema. These cases of antereal suppuration, of which numerous examples have been described by me and members of my staff in years past, naturally are referred to the general surgeon rather than to the urologist. Both groups if not aware of the clinical entity, are liable to be confused and approach the disease transperitoneally. Such cases are presented with unusual frequency at medical societies, and a recent case presented by Cutler²⁴ shows very clearly how serious a condition can develop from a misinterpretation of the clinical picture. Such abscesses on the anterior surface of the kidney drained transperitoneally, invite all sorts of trouble in addition to peritonitis and may require reoperation through the lumbar route for adequate drainage of the cortical and perinephric focus. On the other hand if the condition is recognized, as it should be, a typical lumbar incision with decapsulation and drainage of the cortical abscess rapidly leads to cure.

The importance of leaving these wounds fairly wide open is to be emphasized, as every once in a while one must digitally explore the wound and sweep one's finger around the involved kidney to control any possible retention or to break into any new subcortical abscesses that may have come to the surface. Although usually after the primary decapsulation and incision of these abscesses the postoperative course is uneventful, at times retention with elevation of temperature takes place and the procedure can be readily carried out in bed with complete evacuation of the abscess and rapid improvement in the patient's general condition. In some of these cases, when a large vessel has been obstructed and an infarction has developed producing a carbuncle it frequently is possible somewhere around the third week of the disease to enucleate the infected wedge with a blunt instrument or even with the gloved finger. About this time separation from the normal kidney parenchyma seems to take place. The enucleation of the infarcted area the first time it is seen or carried out is a surprise, as well as a satisfaction to the surgeon. Usually very little bleeding takes place and a small iodoform packing for the purpose of drainage is introduced into the cavity thus produced.

In treating all these cases, the surgeon has to use his judgment as to whether decapsulation will suffice to cure the patient. In my experience decapsulation²⁵ almost invariably has led to a complete cure except when extensive, multiple carbuncles or innumerable abscesses were present, and even here if the patient's condition will permit, a decapsulation with incision of the abscesses or with enucleation should be done as the first step. If the kidney is riddled with abscesses decapsulation may be ineffectual but a secondary nephrectomy, if it should be necessary, can readily be done, as the kidney lies free in the bottom of the wound and can easily be delivered and its pedicle tied off. (Two cases out of forty-three required nephrectomy.)

In closing this paper I will describe a few of the unusual cases referred to so as to call attention to some

of the very difficult clinical pictures presented by these metastatic, cortical, kidney abscesses, due to cocci

REPORT OF FOUR CASES

CASE 1—Right kidney carbuncle, anterior surface, perinephric abscess, left kidney perinephritis following skin infection. Incision and decapsulation of right kidney with enucleation of carbuncle. Eighteen months later, exploratory operation of left kidney, and separation of perinephric adhesions.

S. K., a woman, aged 25, admitted to the hospital Nov. 2, 1925, had been perfectly well up to six months before when she began to suffer from nausea and vomiting with cramplike pains across the epigastrium. These pains recurred every two weeks. Two weeks before admission she had suffered pain in the right hypochondrium radiating to the right shoulder, associated with nausea and vomiting. The pain was dull and persistent. The night before admission, the patient had chills, the temperature rose to 103 F. She thought she had had elevated temperature since the preceding July. For the past two weeks there had been frequent diarrheal stools without blood, there were no urinary symptoms. Two months before admission the patient had a carbuncle of the neck. On physical examination there was a round, palpable mass in the right upper quadrant, which suggested the diagnosis of subacute gallbladder inflammation. There was also some right costovertebral tenderness as well as percussion tenderness over the liver. Roentgenograms of the chest were negative. Examination of the stools for tuberculosis and amebas was negative. Solitary liver abscess was considered as a possibility and emetine was employed with the hope of controlling or ruling out this condition. Cystoscopy was completely negative, but the pyelogram of the right side showed the pelvis slightly enlarged, the upper calices drawn out and incompletely filled. The lower calices were only partially visualized. The whole picture suggested the possibility of pressure against the caliceal system. The patient's fever continued and, as no focus of infection was revealed by study of the gallbladder, intestinal tract and urinary tract the persistent fever and moderate local tenderness posteriorly over the kidney and in front of the right kidney, with the history of carbuncle or furuncle of the neck, led to the tentative diagnosis of cortical abscess or carbuncle of the right kidney with perinephric abscess, despite the fact that the ureteral specimens were negative in both smear and culture.

December 4 the right kidney region was explored and on the anterior surface of the middle third a perinephric abscess containing *Staphylococcus aureus* was encountered, and under the capsule of the kidney a large, necrotic carbuncle was discovered. The carbuncle was about the size of a silver dollar (38 mm.). It was shelled out of the kidney with the finger, and the cavity was packed lightly with iodoform gauze. Following this the patient improved for a while and then began to have some elevation of temperature with pain and tenderness over the left kidney. The kidney was not enlarged, the temperature was low, and it was suspected that the patient had a cortical abscess in the second kidney. Repeated doses of *staphylococcus vaccine* were employed without any increase in tenderness or rise in temperature. The right wound gradually closed and as the temperature became normal the patient was discharged.

Four months later she was readmitted to the hospital for a small persistent sinus of the right lumbar region which was curetted. Granulation tissue was nonspecific and the wound closed rapidly. Cystoscopy and urine cultures from both kidneys at this time were negative and as the temperature subsided and pain disappeared the patient was again discharged.

She was readmitted for the third time in May 1927, complaining again of continuous dull pain in the left upper quadrant radiating to the left lumbar region. She was about 35 pounds (16 kg.) below her normal weight and had a persistent temperature up to 101. There were frequent episodes of diarrhea with passage of large amounts of fresh blood. The lower pole of the left kidney seemed irregular and slightly tender. Between the two admissions the patient had an attack of measles and arthritic pains in the spine, arm and shoulder. Cystoscopy at this time was completely negative, a pyelogram of the left kidney showed no abnormality. In view of the conditions found it was suspected that the patient might have a chronic cortical abscess or carbuncle of the left kidney, and

²⁴ Cutler C. W. Jr. Ann Surg 102: 478 (Sept.) 1935.

²⁵ In cases of uncontrolled diabetes nephrectomy as the primary procedure may be necessary.

exploratory operation was done May 27, 1927, which revealed numerous firm, fibrous, perinephric adhesions. The kidney was normal in size, the pelvis of the kidney was empty, containing no stones. After separation of the kidney from these adhesions, a small, yellowish area was found near the hilus, which suggested a possible old cortical focus from which the infection of the perinephric space had developed. No frank pus was seen anywhere. The postoperative course was uneventful. The patient was discharged from the hospital June 16, 1927, having gained 20 pounds (9 Kg). The pains on the left side had completely disappeared, though she still had slight discomfort at the site of the wound. There were occasional rises in temperature. There was no more diarrhea with blood, the urine continued negative, and the patient resumed her normal activities. Cultures of the urine and guinea-pig inoculations were negative on the last admission, as was the cystogram. There was no reflux up either ureter. During the last six years the patient has been perfectly well except for an attack of undulant fever and a few accidental fractures, and she reported in 1935 that she was in perfect health.

CASE 2—Multiple anterebral abscesses simulating gallbladder disease. Staphylococcus aureus. Patient under observation and having a febrile course for eighty-two days prior to operative therapy. Decapsulation of the right kidney with incision and drainage of multiple cortical abscesses due to Staphylococcus aureus. Rapid convalescence, with a gain of 70 pounds (32 Kg.)

C. R., a woman, aged 38, for the five months prior to admission had complained of malaise and pain in the back. A few weeks before admission there was a sharp pain over the whole back, which lasted for a week. There had been pain in the right hypochondrium and right loin for the past two weeks associated with nocturia and a temperature up to 102. The bowels were constipated. On physical examination there was some right costovertebral tenderness as well as some tenderness anteriorly over the gallbladder, in fact, the tenderness over the gallbladder suggested the possibility of gallbladder disease, though the tenderness was not very severe. The patient's urine showed a few red blood cells, and culture showed *Streptococcus viridans*. There was moderate leukocytosis, 12,500, with polymorphonuclear cells 80 per cent. Cystoscopy was negative. On the sixth day after admission the temperature rose to 103, there was definite right upper quadrant tenderness. A gallbladder series showed no pathologic condition in the gallbladder. On the seventeenth day after admission, urine culture showed atypical colon bacilli. The next day the patient developed pain and stiffness in the right upper extremity. A control roentgenogram of the genito-urinary tract was again negative. The patient continued to have a high temperature and developed pain in the right shoulder and arm. On the twenty-first day the patient had a chill, the temperature rose to 103 and the first positive blood culture showed *Staphylococcus aureus*. On the twenty-eighth day she developed again slight tenderness of the right loin, and urine culture at this time showed *Staphylococcus aureus*. Two days previous to this there was a second positive *Staphylococcus aureus* blood culture. A roentgenogram of the abdomen showed obliteration of the right psoas margin. To date the only diagnosis that seemed feasible was mild sepsis due to *Staphylococcus aureus* with the possibility of a right renal cortical abscess. To emphasize the local renal symptoms the patient was given *Staphylococcus aureus* vaccine, at first 150 and then 250 million. The only result of this activating experiment was generalized drawing pains. As the tenderness in the right kidney region was not accentuated and as the symptoms were not clear cut enough to justify exposure of the right kidney, the patient was retransferred to the medical service on the thirty-fourth day with a diagnosis of consolidation of the lung, perhaps pulmonary furunculosis. Shortly after this the blood culture became negative, the elevation of temperature continued. On the twenty-ninth day the right side of the chest was aspirated, nothing was obtained. By the forty-seventh day the temperature was still high, 104, and there was slight clubbing of the fingers. There was no definite costovertebral tenderness. On the fifty-first day the record shows that there was no adequate evidence for surgical intervention. The patient's chest was again aspirated with negative results. On the fifty-second day cystoscopy was again carried out and was negative. The right and left kidney appeared

normal. On the fifty-fifth day hemoglobin was 52 per cent, and the patient was given a transfusion. On the sixty-second day there was a swelling near the anus, subcutaneous inflammation. On the seventy-first day the patient was afebrile. On the seventy-fifth day there was a recurrence of mild, right costovertebral tenderness. On the seventy-ninth day the temperature rose again, the patient had general pains and a slight pain in the right flank, without any urinary symptoms. On the eightieth day definite resistance to the right of the umbilicus under the right upper rectus and irregular nontender mass was recognizable. On this day another blood culture was made and proved positive for *Staphylococcus aureus*. Tenderness in the right costovertebral angle was increasing by the eighty-second day and it seemed fairly definite that the patient had an anterebral cortical abscess, which had originally simulated gallbladder disease and subsequently had become quiescent. Indications for operation were based on the original right lumbar pain, recurrent right lumbar tenderness, normal urine, positive *Staphylococcus aureus* blood culture and fever. On the eighty-second day, therefore, an incision and drainage with decapsulation of the right kidney was carried out and at the same time multiple cortical abscesses on the anterior surface of the upper half of the kidney were incised and in part excised. The pathologic report of the tissue removed showed chronic and acute purulent inflammation of the kidney capsule and kidney tissue. Culture of the pus showed *Staphylococcus aureus*. Following the operation there was some pyuria due to breaking into the caliceal system at the operation, but the patient made a rapid convalescence and gained 70 pounds (32 Kg.) in a short time.

CASE 3—Bilateral, multiple cortical kidney abscesses following skin infection. Left kidney decapsulated, multiple cortical abscesses exposed as well as a perinephric abscess. Pus showed Staphylococcus aureus. Apparent uneventful recovery, rise in temperature. Thirteen days following first operation, right kidney exposed and decapsulated for multiple abscesses. Both wounds closed five weeks after first operation. Patient discharged well.

J. L., a man aged 22, admitted to the hospital May 16, 1922, and discharged June 23, 1922, was well until ten weeks before admission when he had a mild infection of the toe. Two weeks later he developed an infection of the right index finger and two weeks later suffered with a cold in the head and while in bed had an abscess of the scalp. At this time there was some fever for two or three days. Seventeen days prior to admission he developed some pain in the left lumbar region, with fever of irregular character and was confined to bed. Since then he had pain in the left lumbar region and tenderness, irregular temperature, no chills, and no urinary symptoms.

He was a very pale, septic looking patient. His general physical examination was negative, but in the left lumbar region there was marked tenderness, though no mass could be felt. The blood count showed 29,600 white cells with 86 per cent polymorphonuclears. Urinalysis showed a trace of albumin, some casts and a few white blood cells. Preoperative roentgen examination of the genito-urinary tract was not satisfactory, but showed no stone. The preoperative diagnosis was cortical abscess of the left kidney with possibly perinephric abscess.

May 16 under gas a left lumbar kidney incision was made and a perinephric abscess encountered. The thickened capsule of the kidney was turned back and multiple cortical abscesses were incised without delivering the kidney. The capsule was much thickened and edematous. In one place the cortical abscesses were so grouped as to suggest a suppurating infarct or carbuncle. Rubber dam was placed in front and behind the kidney and a tube between the two sheets of rubber. The wound was left wide open. The culture of the abscesses showed *Staphylococcus aureus*. From May 17 to May 23 the wound was irrigated daily and the kidney regularly palpated in the wound and several soft suppurating areas in the cortex were broken up with the finger. During this period the temperature gradually diminished and the patient seemed to be convalescing when suddenly on the 23d his temperature rose to 105. The wound was then explored with the finger and considerable pus was evacuated, the kidney being easily palpated in the bottom of the wound. There was some urinary leakage from the

kidney into the dressing May 24, the next day, the temperature dropped to normal, and it seemed as if the previous day's digital exploration had controlled the situation. Throughout this period the urine was clear showing a trace of albumin, a few casts and occasionally a few pus cells.

May 25 to 26 the temperature again rose. Blood culture was negative and tenderness was recognized in the right lumbar region. May 27 the temperature rose to 103.8 and in the right lumbar region, on deep pressure, tenderness was somewhat more marked. Exploration with the finger of the left lumbar wound gave no explanation for the rise in temperature, and on May 29 it was decided that the right kidney area, which was tender, was probably the seat of cortical abscesses with some perinephritis. On that day a right lumbar incision was made and the lower pole of the right kidney was found necrotic and surrounded with thick green pus, the perinephric tissues were thickened and edematous. The right kidney was decapsulated in situ just as the left had been, and multiple abscesses, some as large as cherries were opened bluntly. Drainage was carried out with two sheets of rubber dam on each side of the kidney and tube between and the wound was left open without any sutures. After this operation, the wounds on both sides being dressed and irrigated daily and the rubber dam with drawn gradually the patient's temperature became normal within two weeks. During this period several small areas in the right kidney were bluntly opened at dressings with the palpating finger. From the right wound there was also moderate urinary leakage. Beginning with the third week the patient had sufficiently recovered strength to be out of bed, and on June 23, about five weeks after his first kidney operation he was discharged from the hospital. Since the operation the patient has gained about 40 pounds (18 Kg).

CASE 4—Subacute carbuncle of the upper pole of the left kidney. Patient sick five months before first admission having lost 30 pounds (13.6 Kg). Complete workup led to no diagnosis. Four months following first discharge patient apparently well then severe pain in the left kidney region with elevation of temperature. Exploratory operation disclosed a thick perinephric capsule, perinephric abscess under the diaphragm and carbuncle involving the upper third of the kidney which demanded nephrectomy. Pus showed Staphylococcus aureus.

E. G.²⁶ a man, aged 24, seen Oct. 25, 1915 had been sick five months. His trouble began with pain in the left side of the abdomen radiating to the back. It came on suddenly and recurred. He had chills, fever and sweats prior to admission and had lost 30 pounds (13.6 Kg). On admission the examination was negative except for slight tenderness in the left lumbar region. The urine was clear but contained a faint trace of albumin, a moderate number of red cells and a few pus cells. Cystoscopy was negative. There was good indigo carmine excretion on both sides. The urea concentration in what proved to be the pathologic side was higher than on the normal side (12 per cent vs. 0.8 per cent). The urine of both sides showed an occasional cast but no pus cells or tubercle bacilli and was culturally sterile. The ureteral wax bougies revealed no scratch mark. The roentgenogram of the genito-urinary tract showed normal kidney outlines. The blood count was normal. There was no pain and no elevation of temperature while the patient was at the hospital. October 30 as he felt perfectly well, he was discharged with the diagnosis in doubt (nephropoiesis?). The following four months the patient felt absolutely well, and then he had a severe attack of pain in the left hypochondriac and left lumbar regions. He was sent to Bellevue Hospital. He had a temperature of 101. In the left lumbar region the lower pole of the kidney was palpable and felt moderately enlarged and it was slightly tender. Cystoscopy again was negative and there was no hydronephrosis in the left kidney. The roentgen examination was again negative. In view of the repeated attacks of pain during the last nine months, the recent temperature elevation and the palpable enlarged lower pole of the left kidney it was deemed advisable to explore. No definite diagnosis had been made though it was thought that we were dealing with a kidney tumor or a painful perinephric inflammation. April 13, 1916 an exploratory operation was carried out and much to my surprise the kidney had to be removed for chronic carbuncle with massive perinephritis and perinephric abscess under the diaphragm. The conditions found at operation were most

interesting. The left kidney was firmly fixed above the lowest rib, within a thick shell of exudate which was almost an inch thick at the level of the twelfth rib and surrounded it in such a manner as to suggest a sarcoma of the rib. This had undoubtedly impressed me as the lower pole of the kidney. The twelfth rib was resected, and by cutting through the infiltrated tissues of the perinephric region, near the upper pole of the kidney, I opened a fair sized abscess. By the coarsest dissection the thickened perinephric exudate and kidney were partially freed so that I could orient myself. It was then apparent that the perinephric tissues had been consolidated by an inflammatory process into a thick shell of scar tissue and that within this rind lay the diseased kidney. In places this capsule was almost an inch thick. After excising most of the enveloping capsule that appeared in the wound, I removed the kidney. Pus was seen to exude from the cortical kidney abscesses into the perinephric tissues and probably communicated with the large abscess over the upper pole. The pus showed the presence of *Staphylococcus aureus*. The kidney contained a large purulent infarct with thousands of small abscesses—a typical carbuncle. The convalescence was uneventful except for a wound infection and the patient has remained well.

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OBSERVATIONS OF THE GALLBLADDER AND BILE DURING PREGNANCY AT TERM

MILTON G. POTTER, M.D.

BUFFALO

The frequency of abdominal distress in the upper right quadrant of the abdomen of women during antepartum and postpartum periods led me for the past five years into the routine practice of inspecting, palpating and aspirating the gallbladder in all my cesarean cases. The procedure was simple, because I use the high incision above the navel.

First of all, the uniformly distended bladder made me interested and inquiring and then the hope of gaining more information suggested the bacteriologic and later the chemical analysis of the aspirated bile. I found that the results were difficult to interpret in many cases, and at the same time the procedure was accompanied with no dangers or complications.

However, it is not within the scope of this paper to enter into the physiology of the liver, but some of the observations, readings and conclusions may be of interest and promote further investigation, because a search of the present-day literature discloses that the study of the bile of pregnant women at term has never before been attempted.

In a review of the literature by Ivy¹ on the subject of the evacuation of the gallbladder, he notes that it is an established fact that the sphincter of the choledoduodenal mechanism is essential for the filling of the gallbladder as well as the tone of the gallbladder musculature.

In attempting to evaluate the various factors concerned in emptying the gallbladder, he states that the contraction of the gallbladder musculature is excited by the hormone cholecystokinin and by the reflex nervous mechanisms that bring about an increased intravesical pressure, which with a relaxation of the sphincter of Oddi and the duodenal musculature permits the flow of bile. He also states that duodenal peristalsis is not essential but may assist evacuation.

¹ Ivy, A. C. *Physiol. Rev.* 14: 1 (Jan.) 1934. cited by Ivy, A. C. and Bergh, G. S. *The Applied Physiology of the Extrahepatic Biliary Tract*. J. A. M. A. 103: 1500 (Nov. 17) 1934.

by possibly exerting a milking action on the intramural portion of the common duct and that intra-abdominal pressure per se plays no role in the gallbladder evacuation

Interesting studies on the reflex inhibition and excitation of the gallbladder from electrical stimulation of the gastro-intestinal tracts of cats at various levels were made by Birch and Boyden,² and they noted that no reflex contraction was ever initiated from any portion of the intestine but that stimulation of the pars pylorica showed a sudden contraction of the gallbladder. They also noted that relaxation occurred when various portions of the duodenum jejunum and cecum were stimulated, and that the cecum was most sensitive in not only bringing about inhibition of the gallbladder evacuation but also with regard to pain. Boyden³ also noted that stimulation of the plexus which accompanies the left gastric artery induced relaxation of the contracted gallbladder.

Ivy also states in his review that Mann and Higgins observed in pregnant dogs, guinea-pigs and gophers that the gallbladder either does not empty or empties only partially, but there seems to be an exception in that the gallbladders of some pregnant dogs do empty quite normally. Their contention is that this might be due to disturbed gastro-intestinal motility or peristalsis.⁴

Westphal⁵ observed that the tone of the sphincter of Oddi is increased in pregnancy.

Kalk and Schondube⁶ report that the gallbladder of pregnant women contracts earlier and more quickly than that of nonpregnant women after a subcutaneous injection of solution of posterior pituitary.

TABLE 1—Blood Cholesterol at Term Determined by the Bloor Method

Case	Blood Cholesterol Mg	Case	Blood Cholesterol Mg
1	175	22	312
2	150	23	177 5
3	350	24	191
4	207	25	207 5
5	191	26	207 5
6	133	27	200
7	177	28	230
8	277 5	29	200
9	136 2	30	312 5
10	207	31	226
11	177	32	226
12	166	33	207
13	191	34	138
14	22	35	166
15	350	36	138
16	312	37	200
17	176 7	38	200
18	177	39	24
19	166	40	27
20	166	41	166
21	276		

Mg per 100 Cc		Cases	
		Number	Per Cent
From 1 to 200 mg		19	46
From 200 to 300 mg		20	48
From 300 to 400 mg		5	6

Failure to visualize the gallbladder in more than 50 per cent of the primiparas who had no history or clinical evidence of biliary tract disease was noted by Levyn, Beck and Aaron⁷ while Crossen and Moore⁸

failed to visualize the bladder in twenty-two of twenty-five pregnant women at the fortieth week. They believed that their results were due to technical roentgenologic difficulties.

In 390 cesarean sections in normal pregnant women at term, I found approximately 75 per cent with large atonic globular, distended gallbladders. Why?

TABLE 2—Ratio Between Blood and Bile Cholesterol in Twenty Pregnant Women at Term

Case	Blood Cholesterol	Bile Cholesterol	Ratio Blood Bile Cholesterol
1	277 5	470	1 15
2	156 5	700	1 51
3	191	435	1 22
4	166	200	1 12
5	207	545	1 26
6	178	520	1 28
7	133	480	1 36
8	177	325	1 19
9	207	430	1 2
10	277 5	750	1 27
11	276	500	1 2
12	175	750	1 42
13	350	405	1 11
14	225	560	1 24
15	166	190	1 11
16	177	775	1 43
17	166	180	1 1
18	177 5	325	1 18
19	350	200	1 12
20	177	375	1 21

Ratio	Cases	
	Number	Per Cent
1 1	8	40
1 2	8	40
1 3	1	5
1 4	2	10
1 5	1	5

Is it a functional motor disturbance with a spastic sphincter of Oddi, accompanied by a marked atonic distention of the gallbladder as Westphal indicates, or is it because these patients had not eaten before these specimens were taken? Ivy believes the explanation of "atonic distention" most reasonable but is at a loss to explain the cause. He⁹ offers the suggestion of reflexes from the colon with associated constipation.

Considering the work of Birch and Boyden, and realizing that the majority of pregnant women complain of constipation, Ivy's suggestion that constipation might be at least one exciting cause which promotes relaxation of the gallbladder with the resultant distention seems also to me to be a reasonable contributing factor. It would also aid in giving a partial explanation of the distress these women experience in the upper right quadrant.

My observations bear out the observations of Mann and Higgins,⁴ and I am in accord with their suggestion that one of the reasons gallbladders do not empty is disturbed gastro-intestinal motility.

In my series, 2 cc of solution of posterior pituitary was injected after the uterus had been closed and before the gallbladder was aspirated. No effect was ever noted on the contractility of the gallbladder. This distended organ remained distended, while the effect of the pituitary extract on the uterus was most marked. These observations are contrary to the work of Kalk and Schondube whose report I have previously mentioned.

I believe that there is marked stasis of bile in 75 per cent of the cases referred to, because of the appearance of the aspirated bile, which is thick tarry and viscous. This would explain the frequent failure of visualization of the gallbladder during pregnancy, as noted by Levyn, Beck, Aaron, and Crossen and Moore.

BACTERIOLOGIC OBSERVATIONS

Three hundred and ninety samples of bile were studied bacteriologically in two Buffalo Hospital laboratories. I am indebted to Dr Margaret Warwick of the Millard Fillmore Hospital and Dr W J Rose of the Buffalo General Hospital for the bacteriologic work. The bile was obtained by introducing, at an angle, a hypodermic needle (gauge 24) into the gallbladder, and this was easily done because of the greatly increased pressure within the gallbladder. Clinically it was found that postoperative nausea and vomiting were

was one culture of pneumococci (this gallbladder contained many stones). There was one culture of gram-positive diplococci. In one case gallstones were palpated but the culture was negative.

There were fifty-five evident contaminations. *Staphylococcus aureus*, twelve, *Staphylococcus albus*, seven, saprophytic cocci, two, saprophytic gram-positive spore bearing bacilli, twenty-four.

These observations are at variance with the work of Dr Sciuti¹⁰ of Italy and Dr Lloyd Arnold of the University of Illinois. Dr Sciuti concluded from his

TABLE 3—Analysis of Fifty-Eight Specimens

Case	Bile Salts Mg per 100 Cc	Cholesterol Mg per 100 Cc	Ratio of Bile Salts to Cholesterol	Calcium	Cholesterol	Calcium Bilirubinate	Amylase Activity	Lipase Activity	Protease Activity	Culture
1	800	151.8	5.1	±	±		0	0	0	<i>Staphylococcus albus</i>
2	462	224	2.1	±	±	Black pigment	40	0	0	<i>B. coli</i> <i>L. aerogenes</i>
3	373	160	2.1	±	±	Black pigment	48	0	0	<i>B. coli</i> <i>L. aerogenes</i>
4	325	Trace		0	0		0	0	0	Contamination
5	510	122	5.1	0	0	Black pigment	0	0	0	Negative
6	575	70	8.1	0	0		0	0	0	Negative
7	Specimen broken									
8	540	171	3.1	±	0	0	0	0	0	Negative
9	411	299	1.1	±	0	0	0	0	0	Nonhemolytic streptococcus
10	805	91	9.1	0	0	0	0	0	0	Negative
11	889	96	9.1	±	±	0	0	0	0	Negative
12	705	190	4.1	±	0	0	0	0	0	Negative
13	387	158	3.1	±	±	0	0	0	0	Negative
14	461	443	1.1	0	+	0	0	0	0	Negative
15	148	278	1.2	0	±	0	0	0	0	<i>Staphylococcus aureus</i>
16	206	160	2.1	+	0	0	0	0	0	Negative
17	400	958	1.3	0	++++	0	0	0	0	Contaminated
18	533	Trace		0	0	0	0	0	0	Negative
19	382	Trace		0	0	0	0	0	0	Contaminated
20	416	100	4.1	0	0	0	0	0	0	Negative
21	350	270	1.1	0	0	0	0	Q N S	G N S	Negative
22	297	264	1.1	0	0	0	0	0	0	Negative
23	379	216	2.1	0	0	0	31	0	0	Negative
24	422	255	2.1	+	+++	0	0	Q N S	G N S	Negative
25	768	376	1.1	+	+	0	0	Q N S	G N S	Sarcina
26	425	176	3.1	+	0	0 fatty acid	13	0	0	Negative
27	484	480	1.1	+	+++	0	Trace	0	0	Negative
28	714	600	1.1	+	++++	0 fatty acid	Trace	0	0	Negative
29	462	600	1.2	++	++	±	0	0	0	<i>Staphylococcus albus</i>
30	446	522	1.1	+	++++	0 fatty acid	0	0.4	0	Negative
31	451	194		+	++++	±	Trace	0	0	Negative
32	468	400	1.1	+	++++	±	34	0	0	Gram and diplococci
33	504	G N S		+	+	0	G N S	0	0	Sarcina
34	1188	353	3.1	+	++++	0 fatty acid	Trace	Trace	0	Negative
35	652	666	1.1	+	++++	±	Trace	0	0	Negative
36	435	245	2.1	+	++++	0	Trace	0	0	Negative
37	422	166	3.1	±	++++	± fatty acid	0	0	0	Negative
38	560	158	4.1	±	++++	±	42	0	0	Negative
39	577	300	2.1	±	++++	0 fatty acid	0	0	0	Negative
40	395	600	1.2	±	++++	± fatty acid	0	0	0	Negative
41	468	414	1.1	++	++	±	Trace	0	0	Gram and cocci sarcina
42	458	343	1.1	±	++	± fatty acid	Trace	Trace	0	Negative
43	458	316	1.5	±	+++	± fatty acid	0	0	0	Negative
44	476	255	2.1	+	++	±	Trace	0	0	Sarcina
45	686	160	4.1	±	+++	0 fatty acid	15	0	0	Negative
46	1002	500	2.1	±	+++	0	43	Trace	0	Negative
47	895	267	3.1	±	±	0	Trace	0	0	<i>Staphylococcus aureus</i>
48	512	240	2.1	±	+++	0	Trace	0	0	Negative
49	521	20	17.1	±	+	0	0	0	0	Negative
50	545	333	2.1	++	+++	0	Trace	0	0	<i>Staphylococcus albus</i>
51	1121	355	3.1	+	+	0	G N S	0	0	Negative
52	458	60	6.1	+	++++	0	Trace	0	0	<i>Staphylococcus albus</i>
53	628	632	1.1	±	+++	±	0	0	0	Negative
54	390	166	2.1	±	+++	0	0	0	0	Negative
55	769	200	4.1	±	+++	0 fatty acid	Trace	0	0	Negative
56	526	105	5.1	±	+++	0	20	Trace	0	Negative
57	845	462	2.1	±	+++	+	Trace	0	0	Negative
58	882	343	3.1	±	+++	±	39	0	0	Negative

markedly reduced by the release of this intra gallbladder pressure.

Approximately 30 cc of bile was removed in each case and placed in a sterile bottle. At the beginning of this investigation frequent contaminations were noted, but this error in technique was later corrected. The samples were immediately sent to the laboratory. They were cultured in plain broth, in dextrose broth and on agar slants. About one half were cultured anaerobically. Six specimens showed pathogenic growths. In other words, 2 per cent of the patients had pathogenic organisms in the bile. One culture showed a mixed growth of streptococci and staphylococci. There were three pure cultures of *Bacillus coli*. There

experiments that, in the majority of animals at least, a condition of latent microbism is present in the bile content of normal gallbladders, while Dr Lloyd Arnold, who worked on dogs several years ago, found bacteria in about 50 per cent of the cases and in all the strain of bacteria was not pathogenic. He also tried to raise the pathogenicity by passage through dogs without success.

The data in table 1 of the blood cholesterol of forty-one patients at term, as determined by the Bloor method, bear out the known fact that there is a general increase of cholesterol in the blood during pregnancy.

¹⁰ Sciuti cited in Rome letter J A M A 103 2043 (Dec 29) 1934

Forty-six per cent of the patients had blood cholesterol between 1 and 200 mg per hundred cubic centimeters, forty-eight per cent of the patients between 200 and 300 mg, and 6 per cent between 300 and 400 mg.

While much has been done in the study of the cholesterol content of the blood by Herrmann Neuman,

TABLE 4—Analysis of Data

Concentration of Bile Salts Mg per 100 Cc	Number of Cases	Per Cent
100-200	1	2
200-300	2	3
300-400	8	14
400-500	19	33
500-600	11	19
600-700	3	5
700-800	4	7
800-900	6	10
900	3	5

TABLE 5—Concentration of Cholesterol

Mg per 100 Cc	Number of Cases	Per Cent
Trace	3	5
Less than 100	5	9
100-200	15	26
200-300	12	21
300-400	7	12
400-500	5	9
500-600	4	7
600-700	1	2
700-800	0	
800-900	0	
900	1	2

Simons, Strider, Tyler Underhill and many others I can find no work reported in which the cholesterol content of bladder bile and blood were estimated in the same patient. Therefore, in a series of twenty cases I obtained a sample of blood from the uterine incision and after the closure of the uterus a sample of bile was taken from the gallbladder by the method already referred to. While I realize that no reliable and definite conclusion can be reached from such a small series in trying to find a ratio between blood-bile cholesterol in pregnant women at term I am submitting the results for discussion.

It will be seen in table 2 that in eight cases (40 per cent) the blood-bile cholesterol ratio was 1:1. In another eight cases (40 per cent) the ratio was 1:2. In one case (5 per cent) the ratio was 1:3. In two cases (10 per cent) the ratio was 1:4. In one case (5 per cent) the ratio was 1:5. I am continuing this investigation as a joint effort with Dr I. S. Ravdin and his associates from the department of surgical research of the University of Pennsylvania. Through the courtesy of Dr R. Franklin Carter of the New York Post Graduate Hospital, fifty-eight specimens were analyzed and for the analysis and aid in interpretation of these cases I am indebted to Dr Bernard Maraffino of the same hospital.

Of these fifty-eight cases, 60 per cent showed cholesterol concentrations between 100 and 400 mg per hundred cubic centimeters (table 5), 66 per cent of the cases showed bile salt concentrations between 300 and 400 mg (table 4).

There are many theories and data in the literature concerning the etiology of gallstones. One of the most recent theories is that of Andrews, Schoenheimer and Hrdina.¹¹ Their main contention is that gallstones

(human) with very few exceptions are composed for the main part of cholesterol and that cholesterol precipitation is caused by a lowering of the bile salt content of the bile. They believe that the cholesterol is held in solution by the bile salts in a series of loose and firm chemical complexes. Any change in the salt-cholesterol ratio, which they consider is at the level of 20 in normal man, will precipitate cholesterol. Neuman¹² believes that the normal bile salt-cholesterol ratio is 18. Walsh¹³ came to the conclusion while dissolving human gallstones in the gallbladders of dogs that the solubility of cholesterol in bile depends on an interrelationship between fatty substances, bile salts or acids and cholesterol. Altering the concentration of any one of these alters the ability of bile to hold cholesterol in an aqueous solution.

Ravdin, Riegel, Johnston and Morrison¹⁴ present evidence that, while a change in the bile salt-cholesterol ratio may be a factor in gallstone formation, it is not the sole factor.

In my first series of fifty-eight cases, the figures are surprisingly low. As will be noted the bile-cholesterol ratio varies from one to seventeen (tables 3 and 6). In 62 per cent of the cases the ratio of bile salts to cholesterol was between 1 and 3 and in 7 per cent of the cases the ratio was reversed (1:2 and 1:3, tables 3 and 6). In discussing these observations, Dr Ravdin was impressed with the very low bile salt concentrations as the most outstanding fact of this paper. He stated that the concentrations were well within the range of bile salt in liver bile and similar to those found in gallbladder bile from a damaged bladder. These specimens, however, were taken from the gallbladders of sup-

TABLE 6—Ratio of Bile Salts to Cholesterol

	No. of Cases
1:1	14
2:1	13
3:1	9
4:1	5
5:1	3
6:1	1
8:1	1
9:1	2
17:1	1
1:2	3
1:3	1

TABLE 7—Relation Between the Amount of Cholesterol and the Presence of Crystals*

Cholesterol Mg per 100 Cc	Factor for Calcium Bilirubinate	Factor for Cholesterol Crystals
Less than 100	0.0	0.6
100-200	0.1	0.5
200-300	0.1	0.7
300-400	0.4	1.0
400-500	0.6	1.0
500-600	0.3	1.0
600-700	0.8	1.0
900	1.0	

* As expressed in arbitrary factor. Number of cases with crystals / Number of cases.

posedly healthy pregnant women at term. The method used in the bile salt analysis was the Katayama method, a modification of Szilard's.

The data in this series would tend to show that Neuman¹² and Andrews, Schoenheimer and Hrdina¹¹ are

¹² Neuman E. E. Beitr. z. path. Anat. u. z. allg. Path. **86**: 187 (Jan. 3) 1931.

¹³ Walsh E. L. Etiology of Gallstones. Arch. Path. **15**: 698-713 (May) 1933.

¹⁴ Ravdin I. S., Riegel Cecilia, Johnston C. G. and Morrison P. J. Studies in Biliary Tract Disease. J. A. M. A. **103**: 1504 (Nov. 17) 1934.

¹¹ Andrews Edmund, Schoenheimer Rudolf and Hrdina Leo. Etiology of Gallstones. Arch. Surg. **25**: 796 (Oct.) 1932.

incorrect in their assumption that cholesterol precipitation is caused by the lowering of the bile salt content of the bile. There must be some other etiologic factor in stone formation, for none of these fifty-eight cases showed biliary symptoms or palpable stones.

Dr Charles G Johnston¹⁵ of the surgical research department of the University of Pennsylvania School of Medicine expressed surprise that calcium bilirubinate was present on microscopic examination in so few of these cases, since most specimens of duodenal drainage at least develop calcium bilirubinate appearing material

TABLE 8—Ratio of Bile Salts to Cholesterol*

Ratio	Factor
1 1	0.7
2 1	0.9
3 1	0.4
4 1	0.4
5 1	0.7
6 1	1.0
8 1	0.0
9 1	0.5
17 1	1.0
1 2	1.0
1 3	1.0

* Of the total of fifty eight cases fifteen showed no crystals (calcium bilirubinate and cholesterol) in fifteen cases the cholesterol was under 300 mg per hundred cubic centimeters. All the cases in which the cholesterol concentration was over 300 mg per hundred cubic centimeters showed crystals calcium bilirubinate and cholesterol.

from standing (table 3). I cannot interpret these microscopic observations, because it is true that these specimens were examined after they had been standing a long time.

Twenty-four cases, or about 41 per cent, showed some degree of amylase activity (fourteen having a trace), of the six cases in the group which had a cholesterol concentration of over 500 mg per hundred cubic centimeters, only one (16 per cent) showed definite amylase activity (table 3). Of the fifty-two cases in which cholesterol concentration was under 500 mg per hundred cubic centimeters, nine showed definite amylase activity (17 per cent).

In another series of fifty-five cases studied, only twelve cases showed some degree of amylase activity (20 per cent). This low figure might be explained by the fact that these specimens were not examined for a long time after the laboratory received them. Six cases (four showing only a trace) were in the group in which cholesterol concentration was over 500 mg per hundred cubic centimeters. The remaining six cases (cholesterol concentration under 500 mg per hundred cubic centimeters) showed greater amylase activity (table 9).

Five cases showed positive cultures (two *Bacillus coli*), all these cases showed cholesterol concentrations under 300 mg per hundred cubic centimeters, three of them showed definite amylase activity. All the cases in this group with cholesterol concentrations over 300 mg per hundred cubic centimeters were negative in culture. In four of the positive cases there were crystals (table 3).

SUMMARY OF CHEMICAL ANALYSIS OF DATA

1 Sixty per cent of these cases gave cholesterol concentrations between 100 and 400 mg per hundred cubic centimeters.

2 Sixty-six per cent gave bile salt concentrations between 300 and 400 mg per hundred cubic centimeters.

3 Sixty-two per cent gave a bile salt cholesterol ratio between 1 1 and 3 1. In 7 per cent the ratio was reversed (1 2, 1 3).

4 The greater the concentration of cholesterol, the greater the number and more constant was the presence of calcium bilirubin and cholesterol crystals.

5 There was no definite relationship between the bile salt cholesterol ratio and the number and constancy of the crystals found.

6 Only 26 per cent of these cases showed no evidence of cholesterol or calcium bilirubin crystals. In all these cases cholesterol was below 300 mg per hundred cubic centimeters. All the cases in which the cholesterol concentrations were over 300 mg per hundred cubic centimeters showed cholesterol or calcium bilirubin crystals or both.

7 Thirty-six cases from a group of 113 cases studied (31 per cent) showed some degree of amylase activity. There seemed to be no definite relation between amylase activity and cholesterol concentration, although greater amylase activity was noted in cholesterol concentrations under 500 mg per hundred cubic centimeters.

8 The five cases in which positive cultures were obtained all showed a cholesterol concentration under 300 mg per hundred cubic centimeters. All the cases in which there were cholesterol concentrations over 300 mg per hundred cubic centimeters apparently gave negative results on culture.

9 Four of the five cases in which there were positive cultures showed cholesterol or calcium bilirubin crystals or both, only one case showing no crystals.

10 In a series of twenty cases the blood-bile cholesterol ratio was 1 1, in eight cases (40 per cent) 1 2, in eight cases (40 per cent), in one case 1 3 (5 per cent), in two cases 1 4 (10 per cent), in one case 1 5 (5 per cent).

GENERAL CONCLUSIONS

1 The majority (75 per cent) of normal gallbladders during pregnancy, at term, are distended.

2 Appropriate intake of fat during the antepartum period would seem advisable as a preventative of gallbladder distress, provided no previous cholecystitis exists.

3 Stasis of bile in gallbladders of pregnant women at term is common.

4 Bacterial invasion of the gallbladder bile during pregnancy at term is rare.

TABLE 9—Cholesterol Content

Cholesterol Content Mg per 100 Cc	Amylase Activity
325	19
175	Trace
350	32
320	33
450	26
230	14

5 Metabolic dysfunction associated with functional motor disturbance and stasis rather than infection or mechanical pressure would seem to be the forerunner of biliary disease in women.

6 Hypercholesterolemia exists in pregnancy at term.

7 No definite harm was done to our patients by our investigation.

8 Clinically, postoperative nausea and vomiting were markedly reduced by release of the intra gallbladder pressure.

9 No definite ratio between the blood-bile cholesterol concentrations was demonstrated.

10 More study and more exact methods are required for better understanding of the bile and gallbladder during pregnancy.

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INCREASED CARBON DIOXIDE TENSION

AS AN AID IN THE PRIMARY ISOLATION OF
CERTAIN (MEPHITIBIC) PATHOGENIC
BACTERIA

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AND

MARION E LAMB

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The importance of an increased amount of carbon dioxide in the air in contact with primary cultures of certain pathogenic micro-organisms has been known for a good many years. Cohen and Fleming¹ employed this method, with associated *Bacillus subtilis* cultures, in isolating meningococci, but regarded their success as due to the reduction in oxygen tension. Chapin² obtained much better growths of primary cultures of gonococci by increasing the carbon dioxide content of the air to 10 per cent. Bang³ carried out a series of experiments on the effects of varying carbon dioxide and oxygen tensions on the growth of *Brucella abortus* but came to the conclusion that the latter rather than the former, was the governing factor. A good many years later Huddleson⁴ definitely established the importance of increased carbon dioxide tension for the growth of recently isolated strains of *Brucella abortus* but he believed that his optimum concentration, 10 per cent, created the most favorable hydrogen ion concentration for growth. Smith⁵ conclusively proved that a carbon dioxide concentration of from 0.25 to 10 per cent in the confined air is absolutely essential for the unrestricted growth of freshly isolated strains of *Brucella abortus*, that the moisture in the closed jar is only a contributing factor, and that changes in oxygen tension and hydrogen ion concentration within fairly wide limits have little, if any, effect on growth. With freshly isolated cultures of *Haverhillia multiformis*, Parker and Hudson⁶ stated that "on a solid medium the most favorable growth is obtained in a sealed jar in which a candle has been burned."

Recent work by Gladstone, Fildes and Richardson⁷ has shown that the presence of carbon dioxide in a medium is a prerequisite for the growth of all bacteria examined. There is no doubt, however, that some of the more fastidious pathogenic bacteria, when freshly isolated, resent even the atmospheric concentration of carbon dioxide. This is not to be wondered at, for during their existence in the animal body they are accustomed to a free carbon dioxide concentration of approximately 4 per cent. The importance of slight increases in carbon dioxide tension was foreseen by Smith,⁵ who made the statement over ten years ago that, if further study should prove that other pathogenic types share the carbon dioxide requirements of *Brucella abortus* the isolation and early cultivation of such types should be greatly promoted by its use.

Thompson⁸ has recently described a simple method for supplying carbon dioxide in jars for the primary culture of gonococci and meningococci. This depends on the addition of sulfuric acid to the proper amount of sodium bicarbonate in solution, both contained within the jar.

The candle jar devised by Parker and Hudson⁶ is even simpler and has been used for several years in this laboratory for the routine incubation of blood culture flasks and petri dish subcultures from cases in which *Brucella abortus*, *Brucella melitensis* or *Haverhillia multiformis* has been suspected as the etiologic factor. The jars are ordinary museum jars, approximately 15 cm in diameter and 30 cm high. A candle 8 or 10 cm long is placed in the bottom at one side, the flasks and petri dishes are placed in the jar, the candle is lighted and the cover is fitted on top. The candle flame dies out within ten or twenty seconds. Plasticine serves as a seal, except in jars in which the joint has been reground and where stopcock grease is sufficient. This simple procedure produces an atmosphere which contains from 1.5 to 3.5 per cent of carbon dioxide as shown in the table. These concentrations are well within the low and high optimums established by Smith⁵ for *Brucella abortus*, which is probably as fastidious as any of these bacteria. Incubation for forty-eight hours results in little change in carbon dioxide concentration. In jars filled with actively growing cultures of the more easily grown bacteria there

Percentage of Carbon Dioxide and of Oxygen

	Before Incubation	After 48 Hours Incubation
Small candle jar (12 by 20 cm)		
Percentage of carbon dioxide	1.74	1.83
Percentage of oxygen	17.87	18.00
Large candle jar (15 by 30 cm)		
Percentage of carbon dioxide	2.91	3.08
Percentage of oxygen	16.76	16.56

should be an increase in carbon dioxide concentration, owing to the respiration and metabolic activities of the organisms.

Identical results can be obtained by flushing out sealed jars with compressed gas mixtures containing the desired amount of carbon dioxide. The accuracy of such a procedure would be desirable in investigative work, but the optimum range of carbon dioxide concentration is so broad that the expense of the necessary equipment is not warranted in a routine bacteriologic laboratory.

For the past year jars of this sort have been used for the primary isolation of many of the bacteria encountered in the routine hospital work. Primary cultures on sheep's blood agar plates of spinal and joint fluids containing, respectively meningococci and gonococci show profuse growth after twenty-four hours' incubation and the colonies are often 3 to 4 mm in diameter. Foul smelling purulent fluids, which show short chains of small gram-positive cocci on smears from the original fluid or from a blood broth subculture, but which show no growth on an ordinary blood agar plate, yield abundant growth of alpha or beta hemolytic streptococci when the blood agar plates are placed in a candle jar.

To emphasize the importance of this method, the following is a list of routine bacteriologic specimens submitted to this laboratory during July 1935 for

From the Mallory Institute of Pathology Boston City Hospital.
1 Cohen M B and Fleming J S The Diagnosis of Epidemic Meningitis and the Control of Its Treatment by Rapid Bacteriologic and Serologic Methods *J Infect Dis* 23 337 (Oct.) 1918
2 Chapin C W Carbon Dioxide in the Primary Cultivation of the Gonococcus *J Infect Dis* 23 342 (Oct.) 1918
3 Bang B L F The Etiology of Contagious Abortion *Ztschr f Tiermed* 1 241 1897
4 Huddleson I F The Importance of an Increased Carbon Dioxide Tension in Growing *Bact Abortus* (Bang) *Proc Soc Am Bact Abs Bact* 5 16 1920
5 Smith Theobald Some Cultural Characters of *Bacillus Abortus* (Bang) with Special Reference to Carbon Dioxide Requirements *J Exper Med* 40 219 (Aug.) 1924
6 Parker Frederic Jr and Hudson A P The Etiology of Haverhill Fever (Erythema Arthriticum Epidemicum) *Am J Path* 2 337 (Sept.) 1926
7 Gladstone G P Fildes Paul and Richardson G M Carbon Dioxide as an Essential Factor in the Growth of Bacteria *Brit J Exper Path* 16 335 (June) 1935

8 Thompson Luther A Simple Method of Supplying Carbon Dioxide in Jars for Bacteriologic Cultures *Am J Clin Path* 5 313 (July) 1935

which the candle jar was necessary for the process of identification

1 Pus from abscess of buttock Gram-positive cocci in pairs and short chains in blood broth No growth on blood agar plate Subculture from blood broth to candle jar blood agar plate yielded many very large flat alpha hemolytic colonies (pneumococcus type VIII)

2 Blood culture Gram positive diplococci No growth on subculture to blood agar plate Subculture to candle jar blood agar plate yielded many small alpha hemolytic colonies (Streptococcus viridans)

3 Pus from appendix abscess Gram-positive cocci in pairs and short chains in blood broth No growth on blood agar plate Subculture from blood broth to candle jar blood agar plate yielded many large gray alpha hemolytic colonies (streptococcus with alpha hemolysis)

4 Spinal fluid Gram-negative biscuit-shaped diplococci in blood broth No growth on blood agar plate Subculture from blood broth to candle jar blood agar plate yielded many very large gray translucent colonies (meningococcus)

5 Pus from tubo-ovarian abscess As before (gonococcus)

6 Fluid from knee joint As before (gonococcus)

7 Blood culture Very small gram-negative bacilli in blood broth No growth on blood agar plate Subculture from blood broth to candle blood agar plate eventually yielded numerous small pin-point colonies (unidentified gram negative bacillus⁹)

As this requirement seems to be a fairly constant cultural characteristic of certain bacteria, it is suggested that the condition be termed "mephitibiosis" and that the capacity of growing under such a condition be expressed by the adjective "mephitibic." The first member is derived from the noun 'mephitis' meaning foul or contaminated air "Mephitic air" is an old term for carbon dioxide

ACTIVE IMMUNIZATION TO SCARLET FEVER WITH LESS REACTION

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At the Evanston Hospital we have adopted the procedure of testing the nurses, when they enter training, for immunity to scarlet fever by means of the Dick test, and actively immunizing those giving a positive test by subcutaneous injections of the scarlet fever streptococcus toxin

From March 1924 to October 1935 as shown in table 1, 439 nurses were tested and of this number 249, or 56.7 per cent, showed a positive Dick test and were given the injections of scarlet fever streptococcus toxin to produce an active immunity

The amount of toxin used to produce this immunity was gradually increased, by the Dicks, to a total of 115,500 skin test doses divided as follows: first dose 500 skin test doses, second dose 2,000, third dose 8,000, fourth dose 25,000, fifth dose 80,000. The second dose has four times the amount of toxin contained in the first, the third dose has four times the amount of toxin contained in the second, the fourth three and one-eighth times the amount of toxin in the third and the fifth three and one-fifth times the amount of toxin in the fourth

When the injections of toxin were given as outlined the number and severity of the reactions increased markedly as compared with the smaller dosage previously used. This is shown in table 2. As shown in

⁹ This is the fourth time a bacillus of this sort has been isolated from blood cultures in a little over a year. All have been from gynecologic or obstetric cases in which fever followed operation or delivery. One of these strains has been subcultured for over a year but still refuses to grow on an ordinary blood agar plate.

From the Pediatric Division of the Department of Medicine of the Evanston Hospital and Northwestern University.

table 3, the reactions were manifested by general malaise, chills, headache, sore throat, backache, body aches, nausea, rash, fever, vomiting, painful local reactions, diarrhea, weakness and stiff and painful joints occurring separately or in various combinations. It seemed to us that the large number of reactions was due possibly to the large increase in the amount of toxin in each succeeding dose over that contained in the

TABLE 1—Number of Nurses by Class Years the Number Tested, and the Results of the Dick Test Made When They Entered Training

Class Year	Number of Nurses in the Class	Number Tested	Number Dick Negative	Number Dick Positive
1924	74	21	14	1
1926	35	33	8	2
1927	23	22	6	16
1928	32	22	13	19
1929	34	24	14	20
1930	39	30	15	24
1931	31	31	16	15
1932	35	35	14	21
1933	41	41	18	23
1934	4	43	21	22
1935	28	38	19	19
1936	31	31	12	19
1937	39	39	20	19

preceding one. In an attempt to avoid these unpleasant reactions, some of the usual doses of toxin were divided and the increase in the amount of toxin in each succeeding dose was made more gradually. Beginning with the class of 1933, the splitting of some of the usual doses, especially the third dose of 80,000 skin test doses, reduced the reactions to 60.8 per cent of those receiving the toxin. With the class of 1934, further division of the usual doses produced reactions in 54.5 per cent of those injected.

Believing that further improvement in the method was possible, the following modification for actively immunizing against scarlet fever was adopted for the average case, beginning with the class of 1935: first dose 150 skin test doses, second dose 300, third dose 600, fourth dose 1,200, fifth dose 2,500, sixth dose 5,000, seventh dose 10,000, eighth dose 20,000, ninth

TABLE 2—Number and Percentage of Nurses Developing Reactions After the Injections of Toxin in Conjunction with the Method Used

Class Year	Number of Nurses Receiving Injections	Number Showing Reactions After Injections	Percentage of Nurses Showing Reactions	Method Used
1926	25	3	12.0	That advocated by the Dicks
1927	16	1	6.2	That advocated by the Dicks
1928	19	1	5.2	That advocated by the Dicks
1929	20	3	15.0	That advocated by the Dicks
1930	34	9	26.5	That advocated by the Dicks
1931	17	12	80.0	That advocated by the Dicks
1932	21	21	100.0	That advocated by the Dicks
1933	23	14	60.8	Began splitting some of the doses
1934	22	12	54.5	Divided a larger number of the doses
1935	19	5	26.3	Our modification with 10 doses
1936	19	2	10.5	Our modification with 10 doses
1937	19	3	15.7	Our modification with 10 doses

dose 40,000, tenth dose 80,000. This makes a total of 159,750 skin test doses, which is 38.3 per cent more toxin than is given by the injection of the usual five doses. With this modification, 26.3 per cent of those receiving the toxin developed reactions in the class of 1935, 10.5 per cent in the class of 1936 and 15.7 per cent in the class of 1937. The number of reactions during the past three years was greatly reduced and the few reactions that did occur were of such a mild nature that very little time was lost off duty. We believe that

this improvement was due to the more gradual approach to the final dose of 80,000 skin test doses

In our modification the individual is actively immunized by a series of ten injections of the scarlet fever streptococcus toxin. The initial dose is 150 skin test doses and at weekly intervals the amount of toxin in each successive dose is doubled, with the exception of the fifth injection. Whenever reactions occurred, the succeeding dose was increased only 50 per cent or even less to avoid such occurrences. Later, in some of these cases the doses could again be increased 100 per cent. In some cases less reaction occurred when the injections were given at intervals of two weeks. In this way the nurses were immunized with a minimum of disturbance

the modification described 100 per cent of those injected in the class of 1935 were rendered Dick negative after the first set of injections. In the class of 1936 with the same method the percentage was 78.9, and in the class of 1937 again with the same procedure the percentage was 84.2. As is well known, some individuals develop their immunity with more difficulty than others. For the thirteen classes under consideration with a total of 249 nurses receiving these injections of toxin, 184, or 73.8 per cent, showed a negative Dick test after the first set of injections were completed and sixty-five nurses, or 26.2 per cent were Dick positive. After receiving extra injections of the toxin, thirty-eight nurses of the latter group became negative to the

TABLE 3—Various Symptoms of the Reactions and How They Increased in Number *

Class Year	Number of Nurses Receiving Injections	Number of Show ing Reactions	Symptoms of Reactions After Injections of Scarlet Fever Streptococcus Toxin														Total
			General Malaise	Chills	Head ache	Sore Throat	Back ache	Body Aches	Nausea	Rash	Fever	Vomit ing	Painful Local Reaction	Diarrhea	Weak ness	Stiff and Painful Joints	
1926	2	5	2	0	0	0	0	0	0	0	0	0	1	0	0	0	3
1927	16	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1928	19	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
1929	20	3	1	0	0	0	0	1	0	0	0	1	0	0	0	0	3
1930	24	9	3	0	0	1	0	0	0	0	0	0	3	0	1	1	9
1931	15	12	7	5	5	0	2	0	5	2	3	1	7	1	0	3	39
1932	21	21	10	8	15	5	12	4	2	7	5	0	15	1	1	8	91
1933	23	14	4	7	4	1	7	5	4	1	5	3	8	0	1	3	55
1934	22	12	3	3	3	0	0	4	3	0	2	1	2	0	0	1	22
1935	19	5	5	0	0	0	0	0	0	0	0	0	4	0	0	0	9
1936	19	2	1	0	1	0	0	0	0	0	1	0	0	0	0	1	4
1937	19	3	0	0	1	0	0	3	1	1	0	0	0	0	0	0	6

* So that all the members of the class of 1932 who were receiving the injections of toxin showed reactions also the diminution in the number of reactions that has occurred with the more recent classes

TABLE 4—Number of Nurses by Classes Who Were Dick Positive When They Entered Training *

Class Year	Number Dick Positive	Dick Negative After First Set of Injections		Number Dick Negative After Extra Injections	Total Percentage Made Dick Negative	Dick Tested 1 Year Later			Comment
		Number	Per Cent			Number Tested	Number	Per Cent	
1925	7	4	57.1	Not recorded 1 recorded					Records incomplete
1926	20	16	80.0						Records incomplete
1927	16	8	50.0		87.5				2 dropped out
1928	19	10	52.1		68.4				6 dropped out
1929	20	8	40.0		75.0				5 dropped out
1930	24	17	70.8	7	100				
1931	15	11	73.3	4	100				
1932	21	18	85.7	3	100				
1933	23	21	91.3	2	100	21	17	73.9	
1934	22	21	95.4			21	17	73.9	1 not immunized
1935	19	19	100			19	17	89.9	
1936	19	15	78.9	4	100	18	18	100	
1937	19	16	84.2	1	89.4				2 dropped out

* The number and percentage that were made Dick negative after the first set of injections of the toxin was completed, the number who after extra injections of the toxin became Dick negative, and the total percentage made negative to the Dick test. Beginning with the class of 1933 this table also shows the number of nurses who were again Dick tested one year after being actively immunized, and the number and percentage that retained their immunity as shown by this retest.

or loss of time off duty. The final injection is 80,000 skin test doses.

Previous to the use of this modification 80 per cent of the nurses in the class of 1931, and 100 per cent of those in the class of 1932 receiving the usual injections of toxin in the five doses, developed reactions. This was manifested in some by only one symptom, such as headache or vomiting, in others by sore throat, vomiting, rash, joint pains or other conditions in various combinations.

To determine the effectiveness of this modification as compared to the usual method of five injections the Dick test was repeated a few weeks after the last dose of 80,000 skin test doses was given. As will be noted in table 4, 40 per cent in the class of 1929 were rendered Dick negative after the first set of injections. However, at this time the amount of toxin injected was less than is now given in the usual five injections. With

Dick test. This increased the number actively immunized as shown in table 4, to a total of 222 nurses or 89.1 per cent.

For the nurses in the classes of 1925 and 1926 the records are incomplete and the results are not known for eleven nurses. Since that time fifteen nurses of those showing a positive Dick test after the first set of injections dropped out of training before their active immunity could be completed. By subtracting these twenty-six from the 249 nurses there remain 223 nurses with complete records as shown in table 5. Of this number 222, or 99.5 per cent were completely immunized as shown by a negative Dick test. The exception was one nurse of the class of 1934, who was sick in bed for two weeks after an injection of 8,000 skin test doses. Another attempt to immunize this nurse resulted in an illness of several days' duration and further attempts were abandoned.

With the idea of determining the duration of the immunity to scarlet fever produced by the injections of toxin, one year after these nurses were actively immunized they were retested by classes with another Dick test. This retest was initiated in 1931 with the class of 1933. Of the members of this class as shown by table 4 73.9 per cent retained sufficient immunity after one year to give a negative Dick test. 73.9 per cent in the class of 1934, 89.9 per cent in the class of 1935 and 100 per cent in the class of 1936 were negative to this test. At the present time it is too early to carry out this procedure with the class of 1937. It may be possible that with the increase in the total amount of toxin injected with this modification the resulting immunity to scarlet fever, as shown by a negative Dick test, will be more lasting in a larger number of individuals. This can be determined only with further study.

To determine the effectiveness of the active immunization as described in preventing an individual from actually developing scarlet fever, I have looked through the records and found that since 1920 ten student nurses have contracted scarlet fever while in training. These occurred as follows: two in 1921, one in 1922, two in 1923, one in 1924, three in 1925 and one in March 1926. The first six of these cases of scarlet fever occurred before the Dick test was adopted. The result of the Dick tests for the next three cases was not recorded. The last mentioned nurse had a positive Dick test on entering training and after the first set of injections the Dick test was again positive. This was followed by additional injections of toxin. After these had been given, the Dick test was repeated and was positive.

TABLE 5—Number Actively Immunized as Shown by a Negative Dick Test

Class Year	Corrected Number of Initial Positive Dick Tests	Number Eventually Made Dick Negative	Per Cent Rendered Dick Negative	Comment
1925	4*	4	100	
1926	1,†	17	100	
1927	14†	14	100	
1928	13†	13	100	
1929	15†	15	100	
1930	24	24	100	
1931	15	15	100	
1932	21	21	100	
1933	23	23	100	
1934	22	21	95.4	1 reacted severely
1935	19	19	100	
1936	19	19	100	
1937	17†	17	100	

* This number was obtained by subtracting the number of nurses having incomplete records from the number showing a positive Dick test at the time they entered training.

† This number was obtained by subtracting the number of nurses who dropped out of training, before their immunization was complete from the number showing a positive Dick test when they entered training.

Since March 1926 no student nurse has developed scarlet fever, although the case of patients with scarlet fever is included in their course of training. It would appear that the determination of immunity to scarlet fever by means of the Dick test and active immunization of the susceptible individuals are of definite value. Many have raised the objection that active immunization is accompanied by a large number of reactions. I am herewith presenting a method that I believe will make possible this active immunization with a minimum number of reactions.

CONCLUSION

By means of a more gradual approach to the final dose of 80,000 skin test doses, the active immunization with the scarlet fever streptococcus toxin can be accomplished with a marked reduction in the number and severity of these reactions.

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TULAREMIA

REVIEW OF LITERATURE OF CASES CONTRACTED BY INGESTION OF RABBIT AND THE REPORT OF ADDITIONAL CASES WITH A NECROPSY

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Francis,¹ in reviewing the modes of infection with *Bacterium tularensis*, notes three reports of infection through the ingestion of uncooked or partially cooked rabbit. One of these instances was reported by Freese, Lake and Francis,² one by Crawford,³ and the third report is ours. It is our intention in this paper to report in detail the two cases that have come under our observation.

LITERATURE

Since the time of the report by Francis, Beck and Merkel⁴ have added an instance of an infection of this nature. The report by Beck and Merkel is the only report of this nature in which necropsy data are given.

Crawford³ reports an instance in which seven members of a family had the disease. The father and grandmother were not affected. The children found a dead rabbit, which they cleaned, cooked and served for an evening meal. When first seen by the physician four days later they staggered about, vomited and complained of pain. There were no ulcers or skin involvement. They all had temperatures between 103 and 105 F., and two died. Five whose blood was examined showed agglutinins for *Bacterium tularensis* in dilutions of 1:320, 1:640, 1:1,280, 1:2,560 and 1:2,560. Submaxillary nodes were enlarged in some, but no lymph nodes elsewhere were affected and only one patient had conjunctivitis.

Freese, Lake and Francis² described four cases with three deaths in a family after eating a rabbit that was killed by a dog. The onset in all cases was sudden. In one there were nausea, headaches and chills. Three patients vomited and one had convulsions. Within twenty-four hours after onset the axillary temperature was between 103 and 104 F. Conjunctivitis and swelling of the lymph nodes were present. Washings made from swabs of the nose and throat produced tularemia in a guinea-pig. Necropsies were not permitted.

Beck and Merkel's⁴ case was that of a man, aged 61, having a low basal metabolic rate and occasional glycosuria. After shooting a rabbit and dressing it, he ate some of the partially cooked rabbit. The next day he

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¹ Francis Edward, *Tularemia*, *Am. J. Nursing* 31: 15 (Jan.) 1934.

² Freese, H. L., Lake, G. C. and Francis Edward, *Four Cases of Tularemia (Three Fatal)* with *Conjunctivitis*, *Pub. Health Rep.* 11: 369, 372 (Feb. 26) 1926.

³ Crawford, Monroe, *Tularemia from Ingestion of Insufficiently Cooked Rabbit*, *J. A. M. A.* 99: 1497-1498 (Oct. 29) 1932.

⁴ Beck, H. G. and Merkel, W. C., *Tularemia: Fatal Case of Typhoid Form Caused by Ingestion of Rabbit*, *Autopsy Report*, *South M. J.* 28: 422-438 (May) 1935.

felt sick and had an insatiable thirst. All the initial symptoms became gradually worse; he became profoundly toxemic, and a low muttering delirium developed. The temperature reached 105 F on the fifth day. Physical examination showed no cutaneous lesions and no enlargement of the superficial lymph nodes. The liver extended four finger breadths below the costal margin and the spleen was just palpable.

The lungs were clear except for some dullness over the left base posteriorly. The white count rose from 6,325, 88 per cent of the leukocytes being polymorphonuclear cells, to 21,250, 66 per cent of the leukocytes being polymorphonuclear cells. The blood sugar was 140 mg per hundred cubic centimeters. The stools were positive for occult blood.

At necropsy the viscera were edematous and congested. The mesenteric and epigastric lymph nodes as well as those along the diaphragm and head of the pancreas were enlarged and contained large areas of necrosis. The liver was studded with discrete yellowish gray areas. The spleen was enlarged, and areas of necrosis were found. Small ulcers were found in the stomach and ileum. The liver and pancreas showed hemochromatosis. In the lungs there were no lesions except infarcts. Guinea-pigs injected with the tissues developed tularemia.

REPORT OF CASES

CASE 1—History—A white man, aged 44, was admitted to the Duke Hospital Nov. 3, 1932, with delirium and a high fever.

One week before admission the patient, after having consumed a large quantity of whisky over a period of several days, went hunting with a Negro (patient 2). They killed a rabbit, which they cleaned, cooked and ate. No information could be obtained as to the condition of the rabbit when it was killed or as to how it was killed. It is presumed that the rabbit was not well cooked. About eight hours later the patient complained of pain in the left side of the chest, became feverish and had a severe chill. On the following day a profuse diarrhea without blood or mucus ensued, and the fever continued. Three days later he became stuporous and irrational.

On admission to the hospital the temperature was 40.3 C (104.5 F), the pulse 120 per minute, respirations 32 per minute, and blood pressure 120 mm of mercury systolic, 80 diastolic. The patient was well developed. Respiration was rapid and there was an expiratory grunt. The accessory muscles of respiration were not used. He was comatose and the skin had a peculiar dusky red color. The pupils were contracted and did not react to light. The lungs were resonant throughout. There were areas of tubular breathing and very coarse bubbling rales, which appeared and disappeared, owing apparently to the large quantity of mucus that obstructed the bronchi. The other observations were unessential. The red blood cell count was 4,300,000, hemoglobin 12.5 Gm, mean hemoglobin content 29.8×10^{-1} Gm. The white blood count was 9,300, 77 per cent of the leukocytes being polymorphonuclears. The blood Wassermann reaction was negative. The carbon dioxide combining power of the blood was 46.6 volumes per cent. The blood sugar was 113 mg per hundred cubic centimeters and the non-protein nitrogen of the blood 42 mg. Agglutination for *Bacterium tularensis* was positive in a 1:640 dilution of serum.

Course in the Hospital—The patient's high temperature of 40.3 C was maintained until his death six days after admission and thirteen days after the onset of the disease. The pulse rate was relatively slow, ranging between 110 and 130. The respirations during the first four days ranged between 26 and 40. Tachypnea and dyspnea were marked during the last three days. On the morning of his death there were dullness and suppression of breath sounds at the right base. He became more and more cyanotic, and death occurred on the thirteenth day of illness.

Necropsy—This was performed three hours after death. The body was warm. No cutaneous lesions were found. The superficial lymph nodes were not palpable. The peritoneal

surfaces were smooth and glistening. The liver extended about 3 cm below the costal margin. Both pleural cavities were filled with a yellow opaque material. At the point of the bifurcation of the trachea there was a large mass of lymphoid tissue about 10 cm in diameter and about 6 cm in length completely encircling the trachea and bronchi. On section it was seen to be composed of a large amount of necrotic and lymphoid tissue. This mass constricted the trachea and bronchi to about one third of its usual diameter. The pleural surfaces of the lungs were smooth and glistening. In the posterior portion of the right lower lobe was a firm mass measuring about 7 by 6 by 6 cm. On section this mass was necrotic. Nothing was seen in cross section of the remainder of the lung except extensive pulmonary edema and congestion. The bronchial mucosa was red. No ulcers were found in either the stomach or the intestine. The lymph nodes in the mesentery were not enlarged and showed no areas of necrosis. Examination of the kidneys, adrenals, heart, liver, pelvic organs, structures of the neck and bone marrow revealed no gross abnormalities.

Microscopic preparations made from the caseous portions of the lungs showed almost complete destruction of the usual lung architecture and replacement by a mass of debris composed of nuclear remnants, fibrin, and amorphous pink-staining material. Some fairly well preserved cells with pyknotic nuclei were seen. Sections taken from other portions of the lung revealed an interstitial pneumonia. The predominating cells were mononuclear, although some polymorphonuclear cells were seen. The mononuclear cells appeared to be of three types: lymphocytes, plasma cells and monocytes. Some mitotic figures were seen in these cells. The alveoli contained numerous macrophages, which had engulfed considerable debris. No thrombi and no endothelial proliferation were seen in the blood vessels. The lumen of the bronchi were filled as a rule with a large number of polymorphonuclear leukocytes. The splenic pulp was markedly congested and there was some increase in the white cell elements, with an occasional mitotic figure. The malpighian corpuscles were quite large and an occasional one showed a small area of necrosis, however the characteristic feature of the spleen was the presence of numerous focal areas of necrosis which had no relation to the malpighian corpuscles. Scattered through the liver were seen numerous focal areas composed of small cells, which resembled Kupffer's cells. Intermixed with these were some pyknotic nuclei and what appeared to be cytoplasmic debris. A microscopic preparation of a hilar lymph node revealed large focal areas of necrosis scattered throughout the node. These areas appeared to have no definite position with regard to the structure of the node. They resembled tuberculous areas of necrosis except that there were no giant cells. The sinuses were packed with a large number of macrophages and considerable pigment. This pigment was probably from the lungs, as none was seen in sections of a node removed from the abdomen. A microscopic preparation of a lymph node removed from the hilus of the liver showed several extensive areas of necrosis but no giant cell formation. The sinuses contained a large number of mononuclear cells. The testes showed an absence of spermatogenesis. The nuclei of the cells lining the seminiferous tubules had undergone either pyknosis or karyorrhexis. The interstitial tissue was infiltrated with a few plasma cells. Sections of the pancreas, kidney, adrenal and bone marrow showed no changes of note.

Cultures of the blood, lymph nodes, spleen and testes were taken both on cystine agar and on the usual mediums without obtaining *Bacterium tularensis*. A guinea-pig was injected with material from the lung and spleen. The animal died within twenty-four hours of a staphylococcal infection. Two additional guinea-pigs injected with blood and testicle show no evidence of tularemia either clinically or at necropsy.

The anatomic diagnosis was tularemia, focal necrosis in lymph nodes, spleen and lung, focal round cell accumulation in liver, interstitial monocytic pneumonia, lobular pneumonia, pulmonary emphysema.

CASE 2—History—A Negro farmer, aged 31, was admitted to Duke Hospital Nov. 3, 1932, in a lethargic condition. On the night of the hunting trip with patient 1 he was nauseated, vomited, and complained of abdominal soreness. He also had a chill and felt feverish. He had been weak since the onset

and had remained in bed. He had been frequently delirious and there had been some anorexia. November 1 there was another chill. There had been no cough or sputum since the onset of the disease. There was no history of a bloody diarrhea.

Examination—On admission to the hospital the temperature was 39.8 C (103.6 F), pulse 120 per minute, respirations 32 per minute and blood pressure 152 mm of mercury systolic 110 diastolic. The skin was dry and hot. There was a coarse tremor of the tongue. The diaphragm was high on both sides, and there was a lag of the lower chest of the left side anteriorly. The breath sounds were harsh, with prolongation of expiration over the left side of the chest below the angle of the scapula. The breath sounds were suppressed at the left base posteriorly. There was a coarse tremor of the fingers of both hands. The upper reflexes were hypo-active, and knee and ankle jerks were absent. The red blood count was 4,300,000 and the hemoglobin was 137 Gm. The white blood count was 11,850, 76 per cent of the leukocytes being polymorphonuclears. The blood Wassermann reaction was negative. Repeated agglutination of the blood was negative for *Bacterium tularensis*. The direct van den Bergh reaction was 27 mg. The blood nonprotein nitrogen was 120 mg. per hundred cubic centimeters. A blood culture was sterile and an examination of the spinal fluid showed no abnormalities. The urine had 3 plus albumin and many granular casts and leukocytes. The carbon dioxide combining power was 35.3 volumes per cent.

Course in the Hospital—The temperature remained elevated above 40 C (104 F), with a parallel elevation of pulse and respiratory rates. The patient's lethargy finally deepened, and he died on the twelfth day after the onset and the fourth day in the hospital.

Necropsy was denied, but because of the history, the similarity with case 1, and the absence of physical signs to explain the morbid state, the diagnosis of tularemia was made.

COMMENT

Although we cannot prove that the rabbit eaten by the two persons whose cases we have reported had tularemia, it seems likely that the rabbit was weak at the time it was killed, as the hunters were probably too intoxicated to shoot a well rabbit. It is also likely that the animal was not thoroughly cooked, and Francis¹ has shown that the organisms may withstand some cooking and still be infective.

The mode of entry of the organism may have been through the intact skin, but it seems likely that the alimentary canal was the mode of entry. This is borne out by the fact that a lymph node from the hilus of the liver as well as the liver itself showed definite evidence of tularemic infection.

A diagnosis of systemic infection with tularemia was made in both cases because of the high fever, delirium and typhoid state without physical signs. Such a diagnosis led to the agglutination tests and to more detailed histories. The agglutination test in case 1 and the history of the ingestion of rabbit meat appear to confirm the tentative diagnosis. Of especial interest is the fact that in the two cases of strikingly similar courses only one showed a positive agglutination to *Bacterium tularensis*. This is not an unusual observation in typhoid.

It is interesting that no definite ulceration was found in the intestine as in the case of Beck and Merkel.⁴ It does not, however, seem unlikely that the tularemia organisms can pass through the intact intestinal mucosa, as they have the ability to pass through the skin.

Vagal Inhibition—Ventricular slowing for a short period is certainly produced by vagal inhibition; this inhibition is a common occurrence for it is the main cause of fainting attacks.—Dr. Maurice Campbell F.R.C.P., quoted by Fisher Alexander. *Aphorisms in Clinical Medicine, Canad J Med & Surg* 77:166 (June) 1935.

ACUTE, FATAL CORONARY INSUFFICIENCY

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Any person with disease of the coronary arteries may die suddenly. By sudden cardiac death is meant cessation of the heart beat within a few minutes after the onset of acute failure and at a moment when its occurrence was not anticipated. The event does not permit of more precise definition. In a recent compilation of statistics Hamman¹ found that 91 per cent of sudden deaths from natural causes result from diseases of the cardiovascular system, and that of deaths from sudden heart failure 65 per cent are due to disorders of the coronary arteries.

In a majority of instances, disease of the coronary arteries may be recognized clinically. Occasionally, no symptoms or signs are present. More often, when an unexpected attack as of pain or pulmonary edema appears to be the first evidence of disturbance, it is found on more careful inquiry that previous complaints of discomfort were present which were not regarded as having their source of origin in the heart. If an adult, either supposedly in good health or one who has suffered from anginal pain, suddenly falls dead, it is generally assumed that thrombotic occlusion of a coronary artery has occurred. Any acute episode observed in a patient known to have coronary artery disease is commonly ascribed to thrombosis. It is our purpose to call attention to a group of cases not unfamiliar to the pathologist but less well known to the clinician. These patients all have atherosclerosis of the coronary arteries and die suddenly. At necropsy, no fresh occlusion is found and no other anatomic lesion is present to explain the immediate cause of death. To the syndrome may be applied the designation "acute, fatal coronary insufficiency."

MATERIAL

The material was collected from the files of the department of pathology.² All cases of syphilitic aortitis, as well as those in which a complicating condition was present that might have been partly responsible for death, were excluded.³ As a result of this procedure, the number of protocols available was considerably reduced and the records of twenty-four patients with atherosclerosis of the coronary arteries form the basis of this presentation. Three hundred and fifty-two other cases of coronary sclerosis, with and without thrombosis, serve as background for comparison. It must be borne in mind that, with two exceptions (table 1), the patients were sick enough to seek relief in the hospital. Study of a group of ambulatory cases, such as are seen, for example, by the medical examiner might yield somewhat different results. The clinical histories seemed adequately com-

¹ Read in abstract before the American Clinical and Climatological Association, Princeton, N. J., Oct. 21, 1935.

² From the Department of Medicine, College of Physicians and Surgeons of Columbia University and the Medical Clinic of the Presbyterian Hospital.

³ Hamman, Louis. Sudden Death. *Bull. Johns Hopkins Hosp.* 55:87 (Dec.) 1934.

⁴ We are indebted to Dr. James W. Jobling, director of the department of pathology, for permission to use the necropsy protocols.

⁵ In one patient aortic stenosis of unknown etiology was diagnosed clinically and found post mortem. Although this lesion predisposes to sudden death as was recently pointed out by Marvin and Sullivan (*Am. Heart J.* 10:705 [Aug.] 1935) the changes in the coronary arteries were so advanced that the case was included.

plete The hearts were examined in routine fashion, carefully but without the aid of special technics Several blocks of tissue were removed from each specimen for microscopic study Special stains were employed when indicated

CLINICAL PICTURE

With one exception, the patients were 50 years of age or over One man, aged 43, presented such a remarkable picture that a detailed account of his case will be given later Eleven of the twenty-four patients were in the sixth decade of life, the remainder were between 60 and 80 years of age Males predominated in a ratio of 7 to 1 This is a higher proportion of males than was found in a group of 337 patients with coronary artery disease who came to necropsy in this hospital, namely, 2 to 1⁴ It appears that men with this condition are more likely to die suddenly than women The ratio of white persons to Negroes was 11 to 1 the same as in the series just mentioned Sudden death was just as common in the Negro as in the white person

In twelve cases (50 per cent) the clinical diagnosis was erroneously given as coronary thrombosis This is in accord with the usual practice referred to in an earlier paragraph The remaining twelve cases were correctly diagnosed coronary sclerosis

Four patients (16 per cent) were known to have diabetes mellitus, whereas of 297 patients with coronary

source of complaint is noteworthy, more often the heart muscle was sufficiently impaired so that congestive failure also was present Too much stress cannot be put on this circumstance, however, since the patients under consideration were sick enough for hospitalization Unless occlusion has occurred, sufferers from coronary disease rarely seek bed care for pain alone, they enter the hospital because of congestive failure

Hypertension was known to have been present prior to the final admission to the hospital in ten of thirteen cases it was observed shortly before death in eight of nineteen patients and in five cases no observations were made A majority of the patients who died suddenly thus had an elevation of blood pressure at some time prior to their terminal illness The lower incidence of hypertension shortly before death was in all probability due to the occurrence of cardiac insufficiency

Electrocardiograms were taken on seventeen patients In every instance there were deviations from the normal Bundle branch block and a negative T wave in lead 1, or in leads 1 and 2 were observed seven times each permanent auricular fibrillation, three times, paroxysmal auricular fibrillation, twice, complete auriculoventricular block and a prominent Q wave in lead 3, each once Frequently a series of records was taken and in a number of such serial studies there were noted changes in the form of the ventricular complexes from day to day or from week to week, such as have been described as occurring after myocardial infarction⁵

The manner of sudden death is given in table 1 Obviously the circumstances attending the event will vary in hospital and ambulatory patients

PATHOLOGY

The heart was almost invariably enlarged, only four specimens weighed under 400 Gm The range was from 280 to 860 Gm, with an average of 563 Gm

Intracardiac thrombi were present in three of the hearts twice in the left ventricle and once each in the right ventricle and right auricle

Infarcts of the myocardium were noted in eight cases In four instances there were recent areas of infarction in the left ventricle, in eight, old scars were present in the left ventricle and once in the septum In four of the hearts both recent and healed infarcts were found

The lesions in the coronary arteries were of varying degree but in sixteen cases there were extensive calcification and stenosis of both right and left main trunks as well as of their larger branches The changes predominated in the left anterior descending branch most frequently (twelve times) Next in order of frequency were the left circumflex, the right circumflex and the right or left main stems In two cases the orifice of one coronary artery or of both was narrowed, though not occluded by a plaque Curiously enough, no myocardial fibrosis, gross or microscopic, was present in four cases, in two others this was described as slight, in spite of extreme sclerosis, calcification and even complete occlusion of some vessels The remaining eighteen hearts all showed diffuse and well marked fibrotic changes

In none of these hearts were thrombi found in any of the branches of the coronary system Because serial sections were not made, a categorical statement that there had not occurred recent occlusion of one or more

TABLE 1—Manner of Sudden Death in Twenty-Four Cases of Coronary Sclerosis Without Thrombosis

In bed while awake	16
In bed during sleep	2
Sitting in chair	2
Found on floor of room	1
Collapsed in church	1
Collapsed on subway station	1
On bedpan	1

sclerosis in whom death was gradual, only 2.3 per cent had diabetes Three of the four diabetic patients suffered from gangrene, in two a leg had been amputated and, in the third a toe On the basis of this small material it appears that the diabetic patient with coronary sclerosis particularly if gangrene has occurred, is more likely to die suddenly than the non-diabetic patient with comparable changes in the coronary arteries The possible relation of insulin to sudden death will be considered in the discussion

The duration of cardiac symptoms ranged from eighteen months to twenty years, with an average of seven years This is a relatively long duration of life after the onset of symptoms in patients with coronary sclerosis But in striking contrast to this average is the fact that in eight cases (33 per cent) there was a history of cardiac discomfort for less than six months, suggesting that the terminal process was rapidly progressive In one instance, that of a 50 year old diabetic Negro, with advanced coronary lesions, no symptoms referable to the heart were noted

The symptoms and signs prior to the final attack were, in the order of frequency pain and congestive failure combined ten cases, congestive failure only, nine, pain only, three, and paroxysmal auricular fibrillation only one case A story suggestive of previous coronary occlusion was obtained in three cases The relatively uncommon occurrence of pain as the only

⁴ Bruenn H G Turner K B and Levy R L Notes on Cardiac Pain and Coronary Disease Correlation of Observations Made During Life with Structural Changes Found at Autopsy in 476 Cases *Am Heart J* 11: 34 (Jan) 1936

⁵ Wilson F N Barler P S Macleod A G and Klostermeyer L L The Electrocardiogram in Coronary Thrombosis *Proc Soc Exper Biol & Med* 29: 1006 (May) 1932

of the smaller and deeper radicles is not justified That closure of twigs may have taken place is evident from the fact that old and recent infarcts were found in four cases It is probable, however, that these resulted from atheromatous narrowing or occlusion of the nutrient arteries rather than from blockage by thrombi

Lesions of syphilis were not recorded in a single protocol

ABSTRACTS OF ILLUSTRATIVE CASES

Four histories and necropsy protocols are here briefly given in order to illustrate some of the types of cases encountered

CASE 1—J K, a man, aged 43, was an advertising agent The history was obtained from his wife who stated that for a week he had complained of shortness of breath and for two days of precordial pain, aggravated by effort

On the evening of his death he and his wife were on their way home from a cinema On the 168th Street subway station he suddenly had agonizing substernal pain and collapsed One of the hospital residents happened to be on the platform and had him carried into the Vanderbilt Clinic His color was ashen and cyanosis was marked The heart sounds were barely audible and the blood pressure could not be read He died twenty minutes after the onset of acute symptoms

At necropsy the heart weighed 280 Gm There was no myocardial scarring, gross or microscopic The left coronary artery contained several small, slightly raised yellow plaques for a distance of 1 cm from its origin At this point it bifurcated and the anterior descending branch for a distance of approximately 2 cm from the bifurcation was almost completely obliterated by an old, calcified arteriosclerotic lesion Below this, for an equal distance the lumen was also markedly narrowed, being reduced to pinpoint size by eccentric thickening of the wall No thrombus was present in any of the vessels The circumflex artery contained numerous atheromatous plaques The right coronary was narrowed considerably at its orifice, but beyond this its lumen appeared ample At many points discrete and confluent gray and yellow plaques were present

The myocardium of both ventricles was flabby No infarcts were demonstrated There was advanced arteriosclerosis of the aorta and its primary branches Plaques in the aorta surrounded and to a considerable extent narrowed, the orifice of each coronary artery

Noteworthy in this case were the comparative youth of the patient, the short duration of symptoms, the absence of cardiac hypertrophy and, by contrast, the advanced lesions in the coronary arteries

CASE 2—W J, a man aged 53, a stationary fireman and dock hand, for twelve years had had dyspnea on effort and occasional abdominal pain He was admitted to the hospital with congestive failure of marked degree On examination the heart was large and the aorta dilated The blood pressure ranged from 110 to 130 mm of mercury systolic and from 70 to 85 diastolic The electrocardiogram showed a diphasic T wave in lead I, and five days before death auricular fibrillation appeared He died suddenly one month after admission, at a time when he appeared to be improving

At necropsy the heart weighed 600 Gm There were a few yellow intimal plaques in both main branches of the coronary arteries as well as in the aorta Microscopically hypertrophy of the muscle fibers was noted In his final note Dr A M Pappenheimer stated that the pathological study as far as it has been carried out, offers no explanation for the sudden death

The symptoms in case 2 extended over a period of twelve years and the heart was greatly enlarged Whether hypertension had previously been present is not known The coronary lesions were minimal, no other anatomic changes were present to account for the sudden end

CASE 3—J F a man aged 57, a dentist, had had symptoms of congestive failure for two years but no cardiac pain The

heart was greatly enlarged The blood pressure was 110 mm of mercury systolic, 90 diastolic The electrocardiogram showed bundle branch block He was found dead in bed early one morning

At necropsy, the heart weighed 720 Gm There was a small thrombus in the apex of the left ventricle, and the anterior wall of this ventricle was infarcted About 1 cm from the orifice of the anterior descending branch of the left coronary artery was an atheromatous plaque about 3 mm in diameter which almost completely occluded its lumen The lumen beyond this point was normal There were a few yellowish intimal plaques in both right and left main branches

The final pathologic note by Dr Pappenheimer read "A somewhat unusual case of coronary disease in which a single plaque in the descending branch of the left coronary artery led to partial occlusion The fibrosis of the myocardium appeared to be limited to the inner strata and was accompanied by the slow development of a mural thrombus of the left ventricle and progressive cardiac failure"

CASE 4—F H, a man, aged 54, a merchant, for twenty years had had paroxysmal cardiac pain, usually after effort For the ten days preceding his admission to the hospital, pain had been almost continuous and he became short of breath On examination, the heart was only slightly enlarged Regular rhythm was interrupted by premature beats The electrocardiogram showed bundle branch block, and the form of the complexes changed in later records The blood pressure was from 90 to 110 mm of mercury systolic and from 66 to 86 diastolic There was no fever The leukocytes ranged from 15,000 to 17,000, there was well marked polynucleosis He died in his sleep

At necropsy the heart weighed 450 Gm There were thrombi in the right auricle There was a recent infarct in the left ventricle, near the septum and an old area of infarction occupying about one fourth of the anterior wall, also near the septum Both coronary arteries and their main branches showed extensive atheroma, calcification and narrowing of their lumens There were numerous small atheromatous ulcers in the intima The heart muscle showed extensive necrosis, degeneration and scarring, especially marked in the left ventricle There were infarcts in the right lung

The long story of paroxysmal heart pain with recent acute persistent exacerbation in this case suggested the diagnosis of coronary thrombosis The coronary lesions were advanced, indicating a progressive process over a long period of time and leading eventually to closure of portions of the coronary bed, with infarction of the myocardium and congestive failure No thrombi were present in the coronary arteries

COMMENT

Disease of the coronary arteries is the lesion most frequently associated with sudden cardiac death Coronary arteriosclerosis is by far the commonest disorder of these vessels, having been found in 97 per cent of 762 proved cases⁶ Thrombosis is to be regarded as

TABLE 2—Incidence of Sudden Death in 376 Fatal Cases of Coronary Sclerosis and Thrombosis

	Number of Cases	Sudden Death per Cent
Total series	376	14.0
Sclerosis without thrombosis	337	11.8
Thrombosis present	39	33.3

an episode in the course of sclerosis and is clearly not essential for sudden cardiac standstill

The incidence of sudden death in 376 fatal cases of coronary sclerosis, with and without thrombosis is shown in table 2 Of the total series, in 14 per cent death came suddenly But of the cases of sclerosis without thrombosis, in only 12 per cent did death occur

⁶ Levy R L Bruenn H G and Kurtz D Facts on Disease of the Coronary Arteries Based on a Survey of the Clinical and Pathologic Records of 762 Cases Am J M Sc 187 376 (March) 1934

in this manner, whereas in the cases in which a thrombus was present death was sudden in 33 per cent. The occurrence of thrombosis almost tripled the likelihood of a sudden end.

Yet the notion that coronary thrombosis is the immediate cause of death in these patients is erroneous. In thirty-nine hearts in which thrombotic occlusion of

TABLE 3—Incidence of Sudden Death in 376 Fatal Cases of Coronary Sclerosis and Thrombosis, in Relation to Character of Lesions and Previous History of Anginal Pain

Character of Coronary Lesions	Total Number of Cases	Sudden Death per Cent
Few to many plaques	200	10.0
With pain	42	16.6
No pain	158	8.2
Calcification and stenosis	103	12.5
With pain	24	25.0
No pain	79	8.8
Arteriosclerotic occlusion	34	20.5
With pain	15	26.6
No pain	19	10.7
Thrombosis present	39	33.3
With pain	21	39.2
No pain	18	11.0
Total	376	14.0
With pain	102	27.5
No pain	274	9.1

one or more coronary branches was found at necropsy, the descriptions of the thrombi were carefully scrutinized with respect to probable age. In but a single instance could the thrombus be characterized as fresh, that is, as having formed within several hours of death. The one exception was observed in a moribund, elderly man with marked secondary anemia due to a bleeding duodenal ulcer. In all the other cases the thrombus was at least several hours old. Usually the microscopic appearance indicated that it had formed at least several days before the heart ceased to beat, in many of the specimens, organization had occurred and in some canalization had already taken place. In short, thrombosis of a coronary artery is rarely, if ever, the immediate cause of sudden death. It increases the liability to sudden death by seriously reducing the functional capacity of an already impaired coronary bed.

In the light of this circumstance the question naturally arises as to how long after an attack of thrombosis patients may live. The clinical records were consulted, with a full knowledge that the description of symptoms may be misleading and that in a large number of cases the episode is asymptomatic. When recovery from a given attack did not take place, the average duration of life after the attack was two weeks in those patients who died suddenly, as against four weeks in those whose end came gradually, by progressive failure. In the group with sudden death the range in duration of life was from less than one day to fourteen months, in the gradual failure group the range was from three days to two years. It is during the first two weeks after an attack of coronary thrombosis that sudden death is most likely to occur. Rupture of the heart was not observed in any of our cases.

In the course of this study, two other factors bearing on the incidence of sudden death became apparent. These were the character of the coronary artery lesions and a previous history of anginal pain (table 3). In general the more advanced the lesion the more likely was the possibility of sudden death. But the end came quickly and unexpectedly, even in the presence of only a few intimal plaques. And in each of the anatomic groups into which the cases for purposes of analysis were arbitrarily divided, the incidence of sudden death was strikingly higher in the patients who gave a history

of pain than in those who did not. Of the total series, 14 per cent died suddenly. In the group with pain, death was sudden in 27.5 per cent, in the group without pain in only 9.1 per cent.

What is to be regarded as the mechanism of quick cardiac standstill? It is generally believed that ventricular fibrillation is the immediate precursor of sudden death. This may well be so, but it is a conclusion reached largely by inference from animal experiments, since actual graphic records of the final heart beats in man have been obtained in only a few cases.⁷ The theory of vagus inhibition, championed by Allbutt,⁸ has received but little support.

The question as to what, in a given instance, may have induced ventricular fibrillation has not been answered. Since in all the cases described the present-ing pathologic lesions were found in the coronary arteries, it seems reasonable to infer that in some way, acute coronary insufficiency was brought about and that an inadequate supply of blood to the myocardium resulted in cessation of the heart beat. That sudden closure of a coronary artery can cause the ventricles to fibrillate has been known for many years.⁹ But whether ventricular fibrillation or some other disturbance in cardiac mechanism occurred is, for the moment, of secondary importance.

In the presence of anatomically diseased coronary arteries, functional insufficiency may conceivably be brought about by throwing an added burden on the heart or by further curtailing the flow of blood through the coronary channels. In either event there results a disproportion between the amount of work that the heart is called on to perform and the quantity of blood that reaches the myocardium. The work of the heart may be increased by physical effort or by emotion.

Sudden death after sharp exertion, such as running for a train, is not an exceedingly uncommon event, in this series it is exemplified by the man who collapsed on the bedpan. Of greater popular interest is the story of the individual who drops dead following an intense emotional experience, be it joyful or painful. So, one reads of a person's unexpected death after he has learned of the passing away of a dear friend, on being reunited with a relative after years of separation or on holding a royal straight flush in a poker game. One of our patients collapsed during a church service. Those who die during sleep may experience vivid emotions in their dreams. To awaken with the heart beating forcefully and rapidly after dreaming of a fight with a robber or of an exciting chase is a sensation known to most of us. Emotion causes a discharge of epinephrine.¹⁰ Epinephrine stimulates the sympathetic nervous system and increases the work of the heart. In small doses it may cause ventricular fibrillation, in larger amounts it can arrest it.¹¹

7 Penati F. Elektrokardiographischer Befund von Herzflimmern bei plötzlichem Herztod. *Klin Wchnsch* 12:1249 (Aug. 12) 1933.
Hamilton R. L. and Robertson H. Electrocardiographic Studies of the Dying Heart in Angina Pectoris. *Canad. M. A. J.* 29:122 (Aug.) 1933.
Meyer P. Mort subite par fibrillation ventriculaire au cours d'une myocardite chronique encrystee a l'electrocardiographie. *Arch. d. mal. d. coeur* 27:1 (Jan.) 1934.
Levine S. A. The Treatment of Acute Coronary Thrombosis. *J. A. M. A.* 99:1737 (Nov. 19) 1932. (Levine states in this paper that he has seen the records of one such case.)

8 Allbutt T. C. Diseases of the Arteries Including Angina Pectoris. London: Macmillan & Company, 2:466, 1915.

9 Cohnheim J. and von Schultess Reclberg A. Ueber die Folgen der Kranzarterienverschlüsse für das Herz. *Arch. f. path. Anat. u. Physiol.* 55:503, 1881.
Porter W. T. On the Results of Ligation of the Coronary Arteries. *J. Physiol.* 15:121, 1894.

10 Cannon W. B. The Emergency Function of the Adrenal Medulla in Pain and the Major Emotions. *Am. J. Physiol.* 33:356, 1914.

11 Dock William. Transitory Ventricular Fibrillation as a Cause of Syncope and Its Prevention by Quinidine Sulfate. *Am. Heart J.* 1:709 (Aug.) 1929.

To explain sudden death in those who fall over while sitting quietly in bed, apparently serene in spirit, it is necessary to assume the existence of a nervous mechanism for which, as yet, final proof is lacking. We refer to spasm of the coronary arteries or what is more likely, of the arterioles.¹² Conceivably, this could be induced by irritation of the vessel wall by a deeply penetrating lesion, such as an atheromatous ulcer, or by reflex stimuli from other parts of the body, which secondarily affected the nerve endings in the adventitia. The same mechanism may be responsible for death in those cases in which the heart shows minimal coronary lesions (case 2), for even when numerous atherosclerotic plaques are found at necropsy and at that time appear to cause local constrictions the apparent narrowings in the lumen seen in the dead body may not have existed during life.¹³

As far back as 1923, Gigon¹⁴ reported the death of a diabetic patient with cardiac failure after the third dose of insulin and warned against its use in persons with advanced heart disease. Not long after, Hetenyi¹⁵ noted that insulin hypoglycemia precipitated attacks of anginal pain. Middleton and Oatway,¹⁶ among others, found changes in the form of the electrocardiogram during insulin shock. As a result of clinical observations and a review of the literature, Ernste and Altschule¹⁷ concluded that insulin places an added burden of work on the heart, both by causing hypoglycemia and by sympathetic stimulation. Insulin was being given to two of our diabetic patients, one having received an injection twenty minutes before death and the other eight hours before the unexpected end. To diabetic patients known to have coronary sclerosis, insulin should be given cautiously and in amounts carefully calculated to avoid shock.

With respect to digitalis, the evidence that, in therapeutic doses, it has an action predisposing to sudden death is not convincing. To induce ventricular fibrillation, large amounts, pushed to the point of toxicity, are necessary. In our cases, it was being given to thirteen patients during the period immediately preceding the end. To ten patients none was administered, in one instance no information on this point was obtained. Certainly, in the presence of congestive failure, it should not be withheld. And, on the basis of a considerable experience in giving this drug in maintenance doses to such patients over a period of years, there is reason to believe that so administered, it has prolonged rather than shortened life.

After injection into cats, quinidine raises the threshold for the induction of ventricular fibrillation by faradic stimulation.¹⁸ In such experiments the heart is normal and the method of producing the arrhythmia artificial. In patients, Morawitz and Hochrein¹⁹ believe that they have employed quinidine prophylactically with success in that the number of sudden cardiac deaths in the Leipzig clinic was diminished by giving 0.2 Gm

(3 grains) of this drug daily in all cases of heart disease. They particularly recommend its use in the presence of coronary sclerosis. But until it can be proved that ventricular fibrillation is the usual responsible disturbance and further evidence is adduced that quinidine, taken continuously in the small dosage advocated by these authors, actually lessens the likelihood of sudden death, its routine administration does not seem justified. Larger and presumably more effective doses may cause toxic effects.²⁰ Quinidine can induce as well as prevent or abolish, ventricular fibrillation especially if heart block is present.²¹ It is a drug to be used with caution when there is a possibility that it may do harm.

One other feature relating to this group of cases deserves mention. In patients with coronary sclerosis nonfatal attacks of different sorts and of varying degrees of severity occur. Some of these are unquestionably due to coronary thrombosis or to ischemic necrosis of the heart muscle resulting from an extreme degree of narrowing.²² But there are other cardiac disturbances in which there is no subsequent fever leukocytosis is absent and the blood pressure does not fall. The cardinal symptom may be pain, lasting longer than in the ordinary anginal paroxysm and requiring an opiate for its relief, or pulmonary edema or nocturnal dyspnea of the "asthmatic" type. Often there are showers of premature beats, occasionally transient auricular fibrillation or paroxysmal tachycardia is present. Not infrequently gallop rhythm appears or if previously present, becomes accentuated. The electrocardiogram may alter during the paroxysm, as in an anginal attack,²³ or it may show no changes. If changes are observed they are of short duration, and the record reverts quickly to the form seen prior to the attack. Furthermore, there are no progressive alterations in successive records.

The rate of symptomatic recovery is characteristically rapid. Such relatively mild attacks may conceivably result from the closure of small coronary twigs.²⁴ But it seems probable that frequently they represent minor degrees of acute coronary insufficiency without occlusion and clinically may be regarded as intermediate between the ordinary bout of anginal pain or its equivalent and a fatal seizure. From the point of view of therapy, their recognition is of practical importance. For although after such an episode a period of bed rest is essential the enforcement of a rigid regimen such as is prescribed after an attack of coronary thrombosis is, as a rule, not necessary.

SUMMARY

There is a group of patients with atherosclerosis of the coronary arteries to whom death comes suddenly and in whose coronary vessels, at necropsy, no fresh thrombus is found. The syndrome may be designated "acute, fatal coronary insufficiency."

The clinical and pathologic features of twenty-four cases falling into this category have been studied.

12 Leary Timothy. Coronary Spasm as a Possible Factor in Producing Sudden Death. *Am Heart J* 10 338 (Feb.) 1935

13 Stewart J D, Birchwood Eugene and Wells H G. The Effect of Atherosclerotic Plaques on the Diameter of the Lumen of the Coronary Arteries. *J A M A* 104 730 (March 2) 1935

14 Gigon Diabetes und Insulintherapie (Verhandl med Gesellsch Basel) Klin Wchnschr 2 1670 1923

15 Hetenyi G. Angina Pectoris während Insulinbehandlung. *Wien Arch f inn Med* 13 95 (Sept.) 1926

16 Middleton W S and Oatway W H Jr. Insulin Shock and the Myocardium. *Am J M Sc* 181 39 (Jan.) 1931

17 Ernste A C and Altschule M D. The Effect of Insulin Hypoglycemia on the Circulation. *J Clin Investigation* 10 321 (Aug.) 1931

18 Levine H D. Effect of Quinidine Sulfate in Inhibiting Ventricular Fibrillation. An Experimental Study. *Arch Int Med* 49 808 (May) 1932

19 Morawitz P and Hochrein M. Zur Verhütung des akuten Herztodes. *München med Wchnschr* 76 1075 (June 28) 1929

20 Levy R L. Clinical Studies of Quinidine. IV. The Clinical Toxicology of Quinidine. *J A M A* 79 1108 (Sept. 30) 1922

21 Kerr W J and Bender W L. Paroxysmal Ventricular Fibrillation with Cardiac Recovery in a Case of Auricular Fibrillation and Complete Heart Block While Under Quinidine Sulfate Therapy. *Heart* 9 269 (Dec.) 1922; Davis David and Sprague H B. Ventricular Fibrillation. Its Relation to Heart Block. *Am Heart J* 4 559 (June) 1922

22 Buchner Franz, Weber Arthur and Haager Berthold. Koronarinfarkt und Koronarsuffizienz. Leipzig: Georg Thieme 1935

23 Feil Harold and Siegel M L. Electrocardiographic Changes During Attacks of Angina Pectoris. *Am J M Sc* 175 255 (Feb.) 1928; Parkinson J and Bedford D E. Electrocardiographic Changes During Brief Attacks of Angina Pectoris. *Lancet* 1 15 (Jan. 3) 1931

24 Levy R L. Mild Forms of Coronary Thrombosis. *Arch Int Med* 47 1 (Jan.) 1931

Records of 352 other cases of coronary sclerosis, with and without thrombosis, have been similarly studied and used as a background for comparison.

In approximately 12 per cent of the fatal cases of coronary sclerosis without thrombosis, death occurred suddenly. If thrombosis had occurred, death was sudden in 33 per cent. The presence of thrombosis thus almost tripled the likelihood of sudden death. But thrombosis of a coronary artery was rarely if ever the immediate cause of death in these patients. It increased the liability to acute coronary insufficiency by further reducing the functional capacity of an already impaired coronary system.

Nonfatal attacks of various sorts in patients with coronary sclerosis may be regarded clinically as intermediate between the ordinary bout of anginal pain or its equivalent and a fatal seizure. It is probable that many of these attacks are due to minor degrees of acute coronary insufficiency without occlusion.

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DINITROPHENOL POISONING

WITH THROMBOCYTOPENIA, GRANULOPENIA,
ANEMIA AND PURPURA COMPLICATED
BY LUNG ABSCESS

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Granulopenia following the oral administration of alpha-dinitrophenol as a therapeutic agent in the treatment of obesity was first reported by Hoffman, Butt and Hickey¹ in April 1934. Since that time five similar cases have appeared in the literature. We are reporting two additional cases because of several unusual features that are presented for the first time following dinitrophenol, namely, anemia, thrombocytopenia, purpura and lung abscess.

CASE 1—History.—A woman, aged 35, complained of sore throat, dysphagia, fever, and general malaise on May 8, 1935. Her condition became worse and on May 14 she admitted having taken dinitrophenol, from 1½ to 3 grains (0.1 to 0.2 Gm.) daily, intermittently, for the past year to reduce her weight. The only side effect was profuse sweating. For two weeks prior to the onset of the present illness she took 1½ grains (0.1 Gm.) daily and lost about 7 pounds (3.2 Kg.).

The past history, family history and marital history were not essential. The menses occurred one week late followed by a scanty, intermittent, foul bloody discharge at the onset of the present illness and persisted for about one month.

Examination.—The patient weighed 150 pounds (68 Kg.) May 8. The temperature was 101 F., the pulse rate 104, respiratory rate 24 and blood pressure 110 systolic, 90 diastolic. The skin was moist, clammy and pale. The tonsils were acutely inflamed and swollen, with a white grayish membrane. The soft palate, uvula and pharynx were acutely inflamed. There was a scanty, foul, menstrual discharge. The remainder of the physical examination was negative.

May 14 the temperature was 104, pulse rate 130, the respiratory rate 20, the blood pressure 100 systolic, 70 diastolic. The skin over the chest and uvula showed purpuric spots. The patient was extremely ill. The tonsils were acutely inflamed, with a grayish membrane and ulcerations. The soft palate, uvula and pharynx were acutely inflamed. Blood count showed

hemoglobin 62 per cent, red blood cells 3,320,000, white blood cells 900, polymorphonuclear neutrophils 0 per cent, eosinophils 6 per cent, mature lymphocytes 92.5 per cent, immature lymphocytes 15 per cent, platelets markedly diminished, red blood cells appeared normal on the smear. The urine showed some albumin, a rare cast, a few white blood cells and a few red blood cells. Throat smears showed numerous cocci and a few spirilla. A diagnosis of agranulocytic angina was made and pentnucleotide and liver extract therapy was started.

Progress.—From the 14th to the 19th the patient was semiconscious and irrational at times. The skin became dry, hard, waxy and warm following each injection of pentnucleotide. The temperature ranged from 103 to 98.2, the pulse 126 to 100, respiration 22 to 20. The purpuric spots on the skin disappeared, but the scanty menstrual flow continued. The ulcers and the membrane on the tonsils, the inflammation of the uvula, and the pharyngitis showed improvement. The temperature, pulse and respiration remained normal from the 19th to the 21st. May 22 the temperature and pulse began to rise, and the patient became very weak and pale and developed a dry cough. On the 27th she was given a transfusion of 350 cc. of whole blood and four hours later she developed a pain in the right scapular region and some increase in the cough. Five hours later, shock developed, which lasted for several hours. Portable x-ray films of the chest on the 28th showed an area of consolidation in the upper right lobe consistent with a lobar pneumonia. The patient's condition gradually became worse, fever and tachycardia continued, and two abscesses developed in the buttock and right thigh, which were incised and drained on the 24th. June 18, x-ray films showed an abscess in the upper lobe of the right lung. She was placed on a conservative regimen of bed rest and sedatives, following which the temperature, pulse and respiration became lower and on the 29th the abscess was half its original size. July 20, x-ray films showed a disappearance of the abscess, with a thickened interlobar septum between the upper right and right middle lobes. The patient's general condition is entirely normal at the present time except for an anemia, which has developed within the past month.

Therapy.—Local treatment for the throat consisted of salt and soda throat irrigations, sodium perborate and peroxide gargles. The throat was painted with mercurochrome and 10 per cent silver nitrate solution. A continuous ice collar was applied. From May 14 to May 24 she received from one to four daily, in all twenty-four, intramuscular injections of 10 cc. each of pentnucleotide and from one to two daily, in all thirteen intramuscular injections of 3 cc. each of liver extract. May 27 a blood transfusion of 350 cc. of whole blood was given, June 4 200 cc. of whole blood, and June 11, 200 cc. of whole blood. Elver of terpine hydrate with codeine was used for the cough. Other drugs used were magnesium magma, cascara, morphine sulfate, acetylsalicylic acid, papaverine, digitalis, caffeine with sodium benzoate, epinephrine, atropine sulfate, solution of potassium arsenite, reduced iron, pentobarbital sodium, and compound tincture of benzoin steam inhalations. A mustard plaster was used over the right scapula. Local therapy for the abscesses in the right thigh and right buttock consisted of injections of streptococcus serum, and hot magnesium sulfate packs.

Laboratory Work.—Repeated urine examinations showed a moderately heavy trace of albumin, rare casts, a few white blood cells and a few red blood cells. Tests for bile were negative and for urobilinogen positive. Repeated sputum and throat smears and cultures revealed numerous white blood cells, numerous gram-positive cocci in groups and in chains, a moderate number of gram-positive diplococci, a few gram-negative bacilli and diplococci, and a moderate number of gram-positive bacilli, on one occasion a few spirilla, and on June 19 *Streptococcus haemolyticus* and *viridans*. The blood Wassermann reaction was negative. October 3 the sputum smear was negative for tuberculosis and guinea-pig inoculation was negative for tuberculosis. Blood examinations were as follows: May 14, hemoglobin 62 per cent, red blood cells 3,320,000, white blood cells 900, polymorphonuclear neutrophils 0 per cent, eosinophils 6 per cent, lymphocytes 92.5 per cent, immature lymphocytes 15 per cent, platelets decreased. The hemoglobin range was from 50 to 94 per cent, the red blood cell range from 2,570,000 to 5,020,000, the white blood cell

¹ Hoffman, A. M., Butt, E. M., and Hickey, N. G. Neutropenia following Amidopyrine. *J. A. M. A.* 102: 1213 (April 14) 1934.
² Bohn, S. S. Agranulocytic Angina Following Ingestion of Dinitrophenol. *J. A. M. A.* 103: 249 (July 28) 1934. Davidson, L. N., and Shapiro, M. Neutropenia Following Dinitrophenol with Improvement After Pentnucleotide and Leukocyte Cream. *ibid.* 103: 480 (Aug. 18) 1934.
³ Dameshek, William, and Gargill, S. L. Report of Two Cases of Agranulocytosis Following the Use of Dinitrophenol. *New England J. Med.* 211: 440 (Sept. 6) 1934. Silver.

range from 900 to 13,600, the polymorphonuclear neutrophil range from 0 to 70.5 per cent, basophils 0.5 per cent, the eosinophil range from 1 to 7.5 per cent, metamyelocytes 1 per cent, the lymphocyte range from 20.5 to 92.5 per cent, reticulo-endothelial cells 0.5 per cent, the immature lymphocyte range from 0.5 to 1.5 per cent, plasma cells 5.5 per cent, immature mononuclears 1 per cent, the mature monocyte range from 3.5 to 23 per cent, the large mononuclear and transitional cell range from 3 to 16.2 per cent, unclassified cells from 0.5 to 2.5 per cent, reticulocytes 0.2 per cent, the platelet range from 30,000 to normal. On blood smear, from May 14 to May 21 the red blood cells appeared normal, from the 22d to the 24th an occasional red blood cell showed polychromatophilia, on the 27th the red blood cells appeared normal. From June 9 to July 13 an occasional red blood cell showed polychromatophilia and slight variation in size. October 15, hemoglobin was 94 per cent, red blood cells 5,020,000, leukocytes 10,200 neutrophils 66 per cent, lymphocytes 20.5 per cent, large mononuclears 12 per cent, eosinophils 1.5 per cent. Blood count Jan 9, 1936 showed hemoglobin 85 per cent, erythrocytes 3,500,000, leukocytes 12,000, lymphocytes 35 per cent, polymorphonuclears 58 per cent, eosinophils 3 per cent, basophils 1 per cent, basket cells 3 per cent, platelet groups normal. A stained smear showed the red blood cells normal in size, regular in shape and taking the stain evenly. No nucleated red blood cells were found. Platelets appeared normal in number.

CASE 2—History—A woman aged 48, became acutely ill July 10, 1935, five weeks after she started taking dinitrophenol for the reduction of her weight. She took $1\frac{1}{2}$ grains (0.1 Gm.) of dinitrophenol four times daily for one week and 3 grains (0.2 Gm.) twice daily for four weeks, and reduced her weight from 230 pounds (104 Kg.) to 215 pounds (97.5 Kg.). She noticed extreme warmth and sweating as side effects. July 10, sore throat, dysphagia, extreme malaise, sweating, headache, anorexia, and edema of both legs developed. She had abscesses of the tonsils twenty-two years before. An appendectomy was performed in 1922. A subtotal hysterectomy and left oophorectomy was done in 1927. Cholecystectomy for cholelithiasis was done in 1933. The father died of apoplexy, the mother died of abdominal cancer and one sister died of cancer. Two children were living and well. Menstruation began at the age of 12 years and was regular up to 1927. No menses had occurred since the pelvic operation in 1927.

Examination—July 11 the patient weighed 215 pounds (97.5 Kg.), her height was 5 feet 8 inches (173 cm.) the temperature was 102.8, the pulse 108, respiration 30 and blood pressure 144 systolic, 52 diastolic. The patient was acutely ill. The skin was moist and clammy. The tonsils soft palate and pharynx were acutely inflamed. There was bilateral pitting edema of both legs. The remainder of the physical examination gave negative results except for abdominal operative scars.

Progress—Blood count July 12 revealed hemoglobin 101 per cent, red blood cells 5,620,000, white blood cells 2,900, polymorphonuclear neutrophils 1 per cent, eosinophils 1 per cent, lymphocytes 82 per cent, transitionals and large mononuclears 16 per cent, platelets normal, the red blood cells showed slight variation in size. Slight polychromasia and basophilic stippling were noted. There was no immaturity of the white blood cells. There appeared to be a toxic depression of the granulocytes. A diagnosis of agranulocytic angina was made and pentnucleotide therapy was started. The temperature, pulse and respirations became normal, July 14, the patient showed rapid improvement, and she had entirely recovered on the 17th.

Therapy—Local therapy to the throat consisted of salt and soda, throat irrigations and a continuous ice collar. From July 12 to July 17 she received one or two daily injections, nine in all, of 10 cc each of pentnucleotide. The only other drug used was acetylsalicylic acid the first day of her present illness.

Laboratory Work—Urine examination showed a heavy trace of albumin, numerous white blood cells and a few Trichomonas vaginalis organisms. July 13, throat smears showed gram positive cocci singly and in pairs and chains. Small gram negative bacilli were present. Throat cultures showed Streptococcus viridans and nonhaemolyticus predominating. The blood Wassermann reaction was negative. Blood examinations were as follows: July 12, hemoglobin 101 per cent, red blood cells 5,620,000, white blood cells 2,900, polymorphonuclear neutrophils 1 per cent, eosinophils 1 per cent, lymphocytes 82 per cent, transi-

tionals and large mononuclears 16 per cent, platelets normal, the hemoglobin range from 91 to 118 per cent, the red blood cell range from 5,000,000 to 6,660,000, the white blood cell range from 2,900 to 9,400, the polymorphonuclear neutrophil range from 1 to 60 per cent, the eosinophil range from 0.5 to 4 per cent, myelocytes 5 per cent, the lymphocyte range from 29 to 82 per cent, the transitional and large mononuclear range from 2 to 18 per cent, and platelets from 126,000 to normal. On blood smear, from July 12 to July 15 the red blood cells showed slight variation in size, slight polychromasia and basophilic stippling. There was no immaturity of the white blood cells. There appeared to be a toxic depression of the granulocytes. From the 15th to the 22d the red blood cells appeared normal.

The following is a summary of the eight cases³ of granulopenia following the administration of dinitrophenol.

SUMMARY OF CASES

- 1 All eight patients were women.
- 2 The age limit was from 18 to 48 years.
- 3 Dinitrophenol was used in every case within apparently nontoxic limits⁴.
- 4 Although other drugs were used prior to the onset of the granulopenia, no proved cases of acetphenetidin, quinine, caffeine, acetylsalicylic acid or phenobarbital as an etiologic agent have been reported.⁵
- 5 The most important prodromal symptoms occur from ten days to four months after the drug is started and consist of fever, sore throat and headache.
- 6 The most common signs and symptoms occur from one to eight days after the prodromal symptoms and consist of fever, tachycardia, increased respiration, hyperemia, ulceration, pain and swelling of the gums, pharynx, soft palate, uvula, tonsils, and the mucous membranes of the mouth, cyanosis, stupor, and extreme malaise.
- 7 In the cases in which recovery occurred, the white blood cells and the polymorphonuclear neutrophils responded to therapy in from one to three days, and a normal count was obtained in from six to twenty six days.
- 8 The case of Davidson and Shapiro showed a moderate secondary anemia, which became normal one day after a blood transfusion. The blood platelet count was normal although their patient had a hemorrhagic appearance to the gums. Our case 1 showed a marked secondary anemia, a markedly diminished platelet count, and definite purpuric spots on the skin. Our case 2 showed a definite decrease in the platelet count without clinical evidence of purpura, and a normal hemoglobin and red blood cell count. The three other cases in which blood counts were taken revealed no anemia and either a normal or an increased platelet count.
- 9 Granulopenia accounts for two of the four fatalities following the use of dinitrophenol⁶ from the recommended apparently nontoxic dose of from 3 to 5 mg per kilogram of body weight.⁴ "It is perhaps malignant neutropenia occurring during dinitrophenol medication that has aroused the greatest professional alarm."⁷
- 10 The five patients who received pentnucleotide recovered. One of the two patients who received

³ Hoffman, Butt and Hickey¹; Bohn²; Davidson and Shapiro³; Dameshek and Gargill⁴; Silver¹¹.

⁴ Cutting, W. C., Mehrtens, H. G. and Taunter, M. L. *Actions and Uses of Dinitrophenol* J. A. M. A. **101** 193 (July 15) 1933.

⁵ Council on Pharmacy and Chemistry. *The Relation of Amidopyrine and the Barbituric Acid Derivatives to Granulocytopenia* J. A. M. A. **102** 2183 (June 30) 1934.

⁶ Dameshek and Gargill⁴; Silver¹¹; Masserman, J. H. and Goldsmith, Harry. *Dinitrophenol: Its Therapeutic and Toxic Actions in Certain Types of Psychobiologic Underactivity* J. A. M. A. **102** 523 (Feb. 17) 1934. *Medicine and the Law: Death After Slimming Treatment* Lancet **1** 489 (March 3) 1934.

⁷ *Dinitrophenol in Obesity* editorial J. A. M. A. **103** 1950 (Dec. 22) 1934.

adenine sulfate died. The one patient who received only liver extract and blood transfusions died. As our second patient promptly recovered from pentnucleotide alone the value of other forms of therapy such as liver extract, x-rays, leukocytic cream,⁸ leukocytic extract, and blood transfusions are questionable except of course for the treatment of secondary anemia as in our case 1. Local therapy for the throat and general supportive measures are helpful to make the patient comfortable but have no specific curative action.

11 The loss of weight from dinitrophenol was no more than one might expect from dietary measures alone. This corresponds to the opinion of Strang and Evans,⁹ who state that the practical value of dinitrophenol as an aid in weight reduction is very questionable. Dunlop¹⁰ states that it would appear that exceedingly toxic or even lethal doses of dinitrophenol would be required to ensure the same effect as that produced by diets of 1,000 calories.

12 Autopsy¹¹ revealed severe degeneration of the heart, liver and kidneys. This corresponds to the observations of Poole and Hanning¹², Tainter and Wood,¹³ De Chatel and Motike¹⁴ and MacBryde and Taussig.¹⁵

COMMENT

Cases of diffuse bone marrow depression following the use of dinitrophenol have not been reported, despite the close relationship of this drug to benzene. Other drugs containing the benzene ring are known both experimentally and clinically to produce anemia, thrombocytopenia, granulopenia and purpura. Selling¹⁶ in 1910 first called attention to the peculiar selective depressant action of benzene on the hematopoietic apparatus. In 1916 he¹⁷ stated that "benzol is a powerful leukotoxin. It destroys the white cells of the circulating blood, and the parenchymal cells of the hematopoietic organs. Myeloid tissue is injured more than lymphoid tissue, and corresponding to this, the polynuclear leukocytes of the circulating blood are more affected than the lymphocytes. The erythroblastic tissue of the bone marrow is destroyed, but the circulating erythrocytes are injured relatively little." Our case 1 illustrates the diffuse nature of the bone marrow depression as evidenced by anemia, thrombocytopenia, leukopenia and granulopenia. Our case 2 reveals the selective damage to the bone marrow as shown by the normal hemoglobin and red blood cell count, thrombocytopenia, leukopenia and granulopenia. The average red blood cell lives in the peripheral circulation from fourteen to thirty days or more, the length of life of the mature neutrophil that reaches the blood stream is from one to six days. It is obvious then that one should take complete blood and platelet counts for at

least two to four weeks on all patients in whom a general bone marrow depression may be suspected and in some cases, as shown by our case 1, blood counts should be taken for several months, as there may be some permanent damage to the erythroblastic tissues of the bone marrow. It might be advisable therefore to institute iron therapy as a prophylactic measure in these cases, before the onset of the anemia. Aisphenamine has produced granulocytic aplasia of the bone marrow as well as numerous cases of aplastic anemia.¹⁸ Farley¹⁹ states that the clinical picture presented by these patients varied according to the degree of bone marrow depression and according to the particular element or elements of the marrow affected. He states that the rarity of occurrences suggests a preceding weakness of the hematopoietic apparatus of the individuals affected. Bionfin and Singerman²⁰ postulate an idiosyncrasy which may be reflected in the entire hematopoietic system as an aplastic anemia or by selectivity, in any of its component parts, producing granulopenia or thrombocytopenic purpura as the case may be. Kracke²¹ has been able to produce the clinical picture of agranulocytosis accurately in the experimental animal by the use of benzene, ortho-oxylbenzoic acid and hydroquinone. Madison and Squeri²² report a series of fourteen cases of primary granulocytopenia which were directly preceded by the use of aminopyrine alone or in combination with a barbiturate. Experimentally, one rabbit given allylisopropylbarbituric acid and aminopyrine by mouth died on the thirteenth day with a complete absence of granulocytes in the peripheral blood and a marked anemia. They believe that the appearance of primary granulocytopenia following the use of such drugs may be the result of an allergic or anaphylactoid reaction. It is interesting to note that the common factor in all of the drugs mentioned is the benzene ring. The relationship between lung abscess in our case 1 and dinitrophenol cannot be established from one case but should be borne in mind as a possible untoward effect of this drug.

Kracke²³ states that the red blood cells in these cases are little affected except when the illness is prolonged. He also states that there is often a hemorrhagic diathesis due to absent or diminished blood platelets, and it is becoming evident that one cannot draw a hard and fast line between those cases showing neutropenia only and those showing the same condition complicated by diminished platelets, purpura, bleeding and so on. It is further evidenced that in some individuals only the myeloblastic tissues are affected, in some the thrombocytopenic tissues are affected, and in some the erythroblastic tissues are affected or that they may occur in combinations and variations in severity of any or all three.

CONCLUSIONS

1 Dinitrophenol is unpredictably toxic²⁴ except in the one case reported by Fiumess²⁵ and the fact that

⁸ Strumia M M. The Effect of Leukocytic Cream Injections in the Treatment of the Neutropenias. *Am J M Sc* **187**: 527 (April) 1934.

⁹ Strang J M and Evans F A. An Evaluation of Dinitrophenol as an Aid in Weight Reduction. *J A M A* **104**: 1957 (June 1) 1935.

¹⁰ Dunlop D M. The Use of 2,4-Dinitrophenol as a Metabolic Stimulant. *Brit M J* **1**: 524 (March 24) 1934.

¹¹ Silver Solomon A. New Danger in Dinitrophenol Therapy. Agranulocytosis with Fatal Outcome. *J A M A* **103**: 1058 (Oct 6) 1933.

¹² Poole F E and Hanning R B. Sudden Death from Dinitrophenol Poisoning. Report of a Case with Autopsy. *J A M A* **102**: 1141 (April 7) 1934.

¹³ Tainter M I and Wood D A. A Case of Fatal Dinitrophenol Poisoning. *J A M A* **102**: 1147 (April 7) 1934.

¹⁴ de Chatel A and Motike J. Ueber die Gefahren der therapeutischen Anwendung des Alpha-Dinitrophenol. *Deutsches Arch f klin Med* **176**: 700 1934.

¹⁵ MacBryde C M and Taussig B L. Functional Changes in Liver, Heart and Muscles and Loss of Dextro-Tolerance Resulting from Dinitrophenol. *J A M A* **105**: 13 (July 6) 1933.

¹⁶ Selling Laurence A. Preliminary Report of Some Cases of Purpura Haemorrhagica Due to Benzol Poisoning. *Bull Johns Hopkins Hosp* **21**: 33 1910.

¹⁷ Selling Laurence. Benzol as a Leukotoxin. *Johns Hopkins Hosp Rep* **1**: 83 1916.

¹⁸ Dodd Katharine and Wilkinson S J. Severe Granulocytic Aplasia of the Bone Marrow. Report of a Case Following Arphenamine Treatment in Congenital Syphilis. *J A M A* **90**: 663 (March 3) 1928.

¹⁹ Farley D L. Depressed Bone Marrow Functions from Arphenamines. *Am J M Sc* **179**: 214 (Feb) 1930.

²⁰ Bionfin I D and Singerman Isidor. Acute Aplastic Anemia Complicating Arphenamine Therapy. *J A M A* **98**: 1723 (May 14) 1932.

²¹ Kracke R R. Experimental Production of Agranulocytosis. *Am J Clin Path* **2**: 11 (Jan) 1932.

²² Madison F W and Squeri T L. The Etiology of Primary Granulocytopenia (Agranulocytic Angina). *J A M A* **10**: 753 (March 10) 1934.

²³ Kracke R R. A Review of Granulocytopenia (Agranulocytosis). *J Lab & Clin Med* **17**: 993 (Jul) 1932.

²⁴ Poole and Hanning.¹² Adler.² Fiumess F M. Allergic Reaction to Dinitrophenol. *J A M A* **102**: 1219 (April 14) 1934.

persons with chronic rheumatism, tuberculosis, alcoholism, renal disorders and hepatic disease seemed to have a lessened resistance.²⁶

2 There is no known specific chemical antidote for dinitrophenol.²⁷

3 In view of the rapidly increasing number of untoward effects of this drug, such as peripheral neuritis,²⁸ cataracts,²⁹ anemia, thrombocytopenia and purpura, as well as the convincing comprehensive report of the Council on Pharmacy and Chemistry for not accepting this drug in New and Nonofficial Remedies,³⁰ we feel that physicians should make every effort to discourage its use.

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THE PREVENTION OF HYPOCHROMIC ANEMIA IN PREGNANCY

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Within the past decade the high incidence of anemia in pregnancy has become generally appreciated. Although the work of Strauss and Castle,¹ Dieckmann and Wegner,² and others has indicated that a 10 to 20 per cent lowering of the hemoglobin during pregnancy may be the result of hydremia and not represent true anemia, approximately 25 per cent of otherwise normal women are definitely anemic following parturition.³ The vast majority of such patients have anemia of the hypochromic variety,⁴ which has come to be associated with a virtual deficiency of available iron for purposes of blood regeneration within the body. Strauss and Castle,⁵ Davies and Shelley,⁶ and other clinicians have shown that in pregnancy this anemia is to be associated not only with the presence of the fetus but also with gastric secretory defects and inadequate diets and usually may be completely relieved equally well during as after gestation by the administration of inorganic iron salts in suitable dosage. As a result of modern studies the routine administration of iron to all pregnant women as a prophylactic measure has been advocated.⁷ Our purpose in this communication is to

present an adequately controlled series of observations on 200 pregnant women, 100 of whom received prophylactic iron therapy.

Several investigators have undertaken the problem of prophylaxis of anemia in pregnancy. Jerlov⁸ treated 120 moderately anemic pregnant women with iron and noted improvement in 90 per cent. Mackay⁹ observed that thirty women who had been treated with iron both during and after pregnancy had 48 per cent higher hemoglobin four months after confinement than a control group of twenty-nine similar women not treated. Davis and Walker¹⁰ administered six different proprietary preparations to a total of eighty-nine pregnant women. No matter what preparation was used, the treated patients showed higher average hemoglobin values than the control patients. The number of patients in each group was so limited, however, that conclusions drawn from the results were not statistically significant. Several of the proprietary remedies employed contained only traces of iron. It is doubtful whether any of the patients received an amount of iron that would be considered adequate in the treatment of hypochromic anemia. Richter and his associates¹¹ administered a proprietary mixture of equine liver extract, glycerated iron and hemoglobin to thirty-eight pregnant women. The average hemoglobin of this group of women was 55 per cent higher than that of an untreated group. Irving¹² administered iron, iron and copper and whole liver to pregnant women in successive two month periods during pregnancy. His failure to consider the changes in hemoglobin that occur during such successive periods of pregnancy, as a result of plasma volume changes, unfortunately makes his data of little value.

METHODS

The 200 normal pregnant women studied presented themselves for routine care in the antepartum clinic when they were from three to seven months pregnant, the average being 162 days. On arrival, each patient was assigned a number in order. Blood for examination was withdrawn without stasis from an antecubital vein and a careful dietary history was taken. Every woman was given a bottle containing 100 coated tablets with instructions to take one tablet after each meal and to return the bottle and unused tablets at the next visit to the clinic. At all subsequent visits a fresh bottle of 100 tablets was given the patient. Unknown to her, the number of tablets remaining unused at each visit was counted and from these data the actual amount of medication taken was calculated. Patients who had been assigned odd numbers received tablets containing 0.2 Gm. (3 grains) of ferrous sulfate; patients with even numbers received tablets that were identical in appearance and size but contained lactose and no ferrous sulfate.¹³ Women who took less than one of the prescribed three tablets daily were excluded from the two series, as were also those in whom sepsis or hemorrhage developed whether during gestation, parturition or the puerperium. The average daily intake of iron of the treated group was 0.5 Gm. (7½ grains) of ferrous sulfate.

At each visit and again one week after parturition, venous blood was withdrawn for examination. Hemo-

26 Perkins, R. G. A Study of Munitions Intoxications in France. *Pub. Health Rep.* **34**: 2335 (Oct. 24) 1919.

27 Poole and Haining, J. Tainter, M. L. Treatment of Acute Dinitrophenol Poisoning. *J. A. M. A.* **104**: 1071 (March 30) 1935.

28 Nadler, J. E. Peripheral Neuritis Caused by Prolonged Use of Dinitrophenol. *J. A. M. A.* **105**: 12 (July 6) 1935. Matzger, Edward. Can Sensitivity to Dinitrophenol Be Determined by Skin Tests? *J. A. M. A.* **103**: 253 (July 28) 1934. Anderson, H. H., Reed, A. C. and Emerson, G. A. Toxicity of Alpha Dinitrophenol. *ibid.* **101**: 1033 (Sept. 30) 1933.

29 Boardman, W. W. Rapidly Developing Cataract After Dinitrophenol. *J. A. M. A.* **105**: 108 (July 13) 1935. Horner, W. D., Jones, R. B. and Boardman, W. W. Cataracts Following the Use of Dinitrophenol. Preliminary Report of Three Cases. *ibid.* **105**: 108 (July 13) 1935.

30 Council on Pharmacy and Chemistry. Reports of the Council. *J. A. M. A.* **105**: 31 (July 6) 1935.

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From the Tufts and Harvard Medical services, Boston City Hospital, the Department of Preventive Medicine, Tufts College Medical School, and the Departments of Medicine and Tropical Medicine, Harvard Medical School.

1 Strauss, M. B. and Castle, W. B. *Am. J. M. Sc.* **184**: 663 (Nov.) 1932.

2 Dieckmann, W. J. and Wegner, C. R. Studies of the Blood in Normal Pregnancy. *Arch. Int. Med.* **53**: 188 (Feb.) 1934.

3 Strauss and Castle, W. B. Dieckmann and Wegner. Bland, P. B., Goldstein, Leopold and First, Arthur. *Am. J. M. Sc.* **179**: 48 (Jan.) 1930.

4 Strauss, M. B. and Castle, W. B. *Am. J. M. Sc.* **185**: 539 (April) 1933.

5 Strauss, M. B. *Am. J. M. Sc.* **180**: 818 (Dec.) 1930. Strauss and Castle.

6 Davies, D. T. and Shelley, U. *Lancet* **2**: 1094 (Nov. 17) 1934.

7 Strauss, M. B. The Etiology and Treatment of Anemia in Pregnancy. *J. A. M. A.* **102**: 281 (Jan. 27) 1934. Kichham, C. J. and Titus, R. S. *New England J. Med.* **213**: 586 (Sept. 19) 1935.

8 Jerlov, E. *Acta obst. et gynec. Scandinav.* **8**: 356 1929.

9 Mackay, H. M. M. Medical Research Council Special Report 15, on Nutritional Anaemia in Infancy. London 1931.

10 Davis, M. and Walker, E. W. *New England J. Med.* **210**: 1315 (June 21) 1934.

11 Richter, O., Meyer, A. E. and Bennett, J. P. *Am. J. Obst. & Gynec.* **28**: 543 (Oct.) 1934.

12 Irving, F. R. *Am. J. Obst. & Gynec.* **29**: 850 (June) 1935.

13 Smith, Kline & French, Philadelphia kindly furnished the tablets of ferrous sulfate and the lactose tablets employed in this study.

globin determinations were performed at monthly intervals and one week after delivery by the Sahl method, with tubes so calibrated that 100 per cent was considered the equivalent of 156 Gm of hemoglobin per hundred cubic centimeters of blood. Red blood cell counts were performed with pipets and counting chambers certified by the U S Bureau of Standards.

RESULTS

Initial Examinations—Initial examinations of the two groups of women were made at approximately the same period of pregnancy. The average time after the last menstruation when the treated group first was observed was 160 days, and the untreated group, 164 days.

Forty-six of the women treated with iron partook of diets evaluated as average, which contained meat and vegetables, at least five times a week. Forty-eight women of the control group had similar diets. Seven of the treated women had better than average diets, as did thirteen of the control group. Forty-seven of the treated women and thirty-nine of the untreated women had had definitely poor diets. Thus it is apparent that there were no important differences in the diets of the two groups of women.

The average initial hemoglobin value of the 100 women of the control group was 75 per cent (117 Gm per hundred cubic centimeters of blood) and of the

on each of the 200 women are presented in chart 2. At this time the average hemoglobin value of the 100 women who did not receive iron was 75 per cent (117 Gm per hundred cubic centimeters), a figure that is in essential agreement with similar data obtained by Kuhn¹⁴, Strauss and Castle,¹ Dieckmann and Wegner,² and Bland, Goldstein and First.³ Forty-five of these women had less than this amount of hemoglobin and twenty-four patients had less than 70 per

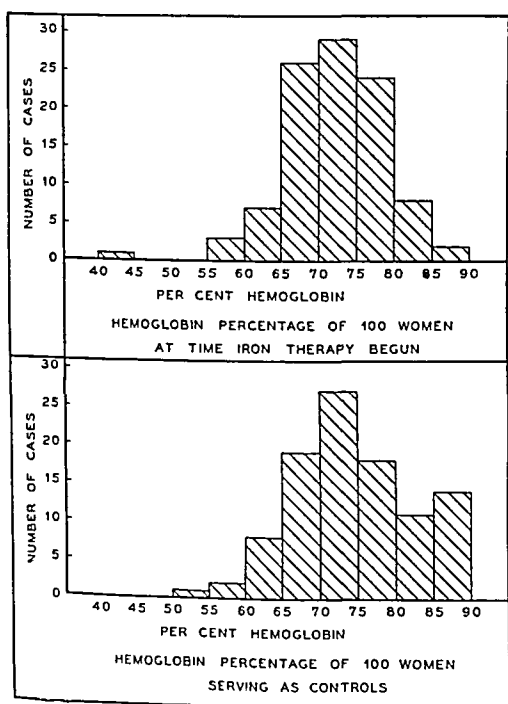


Chart 1—Hemoglobin percentages in the sixth month of gestation

treated group of 100 women was 73 per cent (112 Gm per hundred cubic centimeters) (chart 1). The average initial red blood cell count of the control group was 3.88 million cells per cubic millimeter and of the treated group 3.72 million per cubic millimeter. There was thus no significant difference in blood levels between the two groups of women when they were first examined at approximately the beginning of the sixth month of pregnancy.

Postpartum Examinations—The results of hemoglobin determinations performed one week post partum

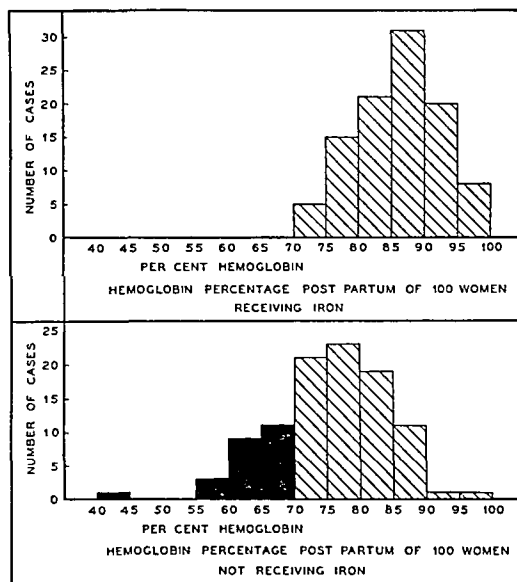


Chart 2—Hemoglobin percentages one week post partum. Solid columns represent patients with less than 70 per cent hemoglobin.

cent (109 Gm per hundred cubic centimeters) hemoglobin and hence must be considered to be distinctly anemic.

The average postpartum hemoglobin of the 100 treated women was 85 per cent (132.6 Gm per hundred cubic centimeters), or a gain of 12 per cent over their average values in the sixth month of gestation. Only five of these 100 women had less than 75 per cent hemoglobin and none had less than 70 per cent.

The average erythrocyte count post partum in the control group was 3.94 million per cubic millimeter and in the treated group 4.28 million per cubic millimeter.

COMMENT

In 1930, evidence drawn from a study of three cases was advanced⁵ in favor of the theory that severe hypochromic anemia in pregnancy was due to a virtual deficiency of iron brought about by gastric secretory defects in the presence of fetal blood requirements. Subsequent studies¹⁵ verified this theory and led to the suggestion that iron be employed as a prophylactic of hypochromic anemia in pregnancy. The data presented here unequivocally demonstrate that, in the absence of hemorrhage or sepsis, the daily administration of 0.5 Gm of ferrous sulfate to women in the last trimester of pregnancy results in higher hemoglobin values than in untreated women.

SUMMARY

Two hundred women were studied during the last four months of pregnancy. Alternate patients were given 0.5 Gm of ferrous sulfate daily. The others

14 Kuhn¹⁴ Paul, Ztschr f Geburtsh u Gynak 90 511 1927
15 Strauss and Castle¹ Davies and Shelley⁴

received placebos Of the 100 women given no iron, twenty-four had less than 70 per cent hemoglobin post partum Of the 100 women given iron, none had less than 70 per cent hemoglobin post partum

The conclusion is drawn that hypochromic anemia in pregnancy may be largely prevented by the routine administration of iron, especially in the latter months of gestation

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Clinical Notes, Suggestions and New Instruments

RAT-BITE FEVER FROM FIELD MOUSE

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Rat-bite fever, or sodoku, is now a widely known disease In most cases the disease is caused by the bite of rats and only rarely by the bite of other animals, such as dogs cats or ferrets In 1932 in Germany Jungbluth¹ reported that a boy, aged 9 years, who had been bitten by a field mouse developed a disease which clinically resembled rat-bite fever The demonstration of spirilla was not possible Bruning² included this case in a compilation of sixty-five cases of sodoku in children as the only one in which the patient was not bitten by a rat In 1932 also, Jenkinson and Jordan³ published a report from North America of the development of rat-bite fever in a man, aged 56, who was bitten by a wild mouse the diagnosis could be made only by clinical evidence, all efforts to demonstrate the causative organism failed

We believe that the following case, which we studied in 1934, is the first in which the bite of a field mouse produced a typical rat-bite fever in which spirilla were demonstrated as the cause

REPORT OF CASE

History—May 30, 1934, a previously healthy schoolboy (T E), aged 14, was bitten on the left fourth finger by a wild field mouse that he had captured in a California hay meadow The wound was small, bled freely, and in a few days healed without soreness or signs of inflammation June 11, however, there was pain and slight swelling at the site of the bite, and there was a general feeling of malaise, headache, and a loss of appetite June 14 the finger was incised, but no pus was obtained The patient was admitted to Mills Memorial Hospital, San Mateo, Calif., June 17

At the time of admission, he had a temperature of 103 F, pulse 110, respirations 20 His cheeks were flushed and he exhibited sporadic muscular twitching in the muscles of his face, abdomen and extremities There were no abnormal manifestations aside from a soft blowing localized systolic murmur over the apex of the heart, and a grayish dry crust about 0.5 cm in diameter, at the base of the left fourth finger surrounded by considerable cellulitis There was no fluctuation and the tenderness was slight There were no signs of lymphangitis The left epitrochlear glands were painful and were moderately enlarged Removal of the crust left an ulcer 0.5 cm deep, which did not bleed

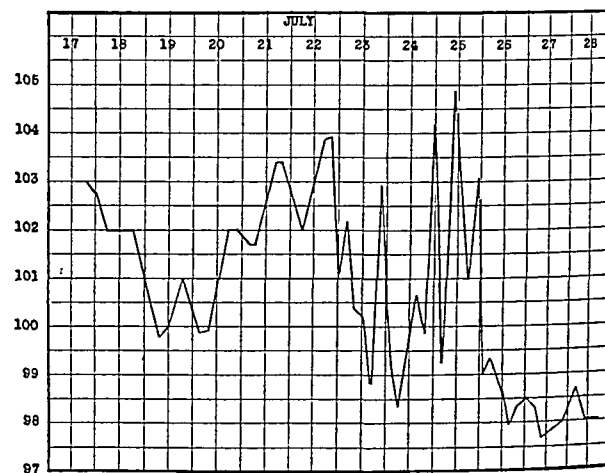
Clinical Course—The temperature is given in the accompanying chart Throughout the entire illness there were no subjective symptoms except headache malaise and chills as one would expect, with rise in temperature June 20 the spleen was palpable for the first time 1 cm below the costal margin June 23 a small urticaria-like wheal was visible on the inner surface of the right thigh The next day numerous slightly raised reddened areas, varying in diameter from 0.5 to 1 cm appeared on the dorsal surface of the left forearm During

the next two days, similar widely scattered lesions appeared on the hips, cheeks, chest, thighs and lower portion of the legs At the height of their development (which was during the third to the fourth day after the initial appearance of the rash) the skin lesions appeared as discrete, purplish red, indurated nodules, not painful, tender or itching

Medication—June 24, 0.15 Gm of neoarsphenamine was given intravenously June 26, 0.3 Gm was given, June 28, 0.15 Gm was given Following the second dose, the rash disappeared rapidly and the temperature fell to normal The patient left the hospital in June and appeared entirely well until July 16, when his temperature suddenly rose to 103 F No skin lesions were manifest but there was slight generalized adenopathy He was given 0.15 Gm of neoarsphenamine The next day his temperature rose to 105 F, and 0.3 Gm of neoarsphenamine was given The following morning his temperature fell to normal and remained so July 19 he was again given 0.3 Gm of neoarsphenamine and July 24 a final dose of 0.4 Gm, at which time he was apparently well and the adenopathy had almost entirely disappeared He had no further relapses

Laboratory and Bacteriologic Data—On the sixth day after entry to the hospital, the urine showed a trace of albumin and a few hyaline casts

There was no anemia The leukocyte count on entry was 4,400 polymorphonuclears, 67 per cent, lymphocytes, 22 per cent, monocytes, 9 per cent, basophils, 1 per cent Daily leukocyte counts were made and the total number of cells remained



Temperature curve

low with practically the same differential count until June 26, when the white cell count rose to 7,900 with a normal differential count The blood Wassermann reaction was negative on two occasions

Cultures taken from the site of the wound and from the blood were repeatedly negative for pathogenic organisms Agglutination tests for tularemia and brucellosis were negative

Tissue fluid from the wound, which was inoculated into mice, was negative Repeated examinations of smears of the patient's blood examined after using Wright's and Giemsa's stains were negative Twice, citrated venous blood was inoculated into white mice and guinea-pigs intraperitoneally and into a rabbit intravenously June 23 a lymph node was removed from the left epitrochlear region This was ground up and inoculated into white mice and guinea-pigs Positive results were obtained only in the mice In one mouse (gland) the organisms were found after fourteen days and in another (blood) after sixteen days, following daily darkfield examinations of the blood taken from the tail

The parasites showed all characteristic features of *Spirillum minus* (Carter), which is identical with *Spirochaeta morsus muris* described by the Japanese authors and generally accepted as the causative organism of rat-bite fever (sodoku) The darkfield illumination revealed the spirilla as having rigid bodies with rapidly moving bipolar flagella The stained smears showed them to be from 2 to 5 microns in length with three to four waves

The authors acknowledge a assistance from the George Williams Hooper Foundation for Medical Research University of California

¹ Jungbluth E Eine der Sodoku (Rattenbisskrankheit) ähnliche Erkrankung durch Feldmausbiss Jahrb f Kinderh 134 85 (Dec) 1932

² Bruning H Sodoku (Rattenbisskrankheit) bei Kindern Ergebn d inn Med u Kinderh 44 1 1932

³ Jenkinson H R and Jordan C F A Case of Rat Bite Fever Caused by the Bite of a Wild Mouse J Iowa M Soc 22 31 (Jan) 1932

Blood of the positive mice was repeatedly transferred to white mice. The strain is still kept going (after one year). The incubation time has become shorter with successive passages and is now around five days, depending mostly on the number of injected organisms and the individual susceptibility of the animals.

It may be mentioned that not in one instance was *Spirillum minus* found in these mice before the experimental infection.

SUMMARY AND CONCLUSIONS

A boy, aged 14, was bitten by a wild field mouse and developed rat bite fever. Venous blood and emulsified lymph node obtained at biopsy and injected into white mice revealed *Spirillum minus*. Cure was effected by the administration of nearsphenamine.

Apparently healthy rats and mice may harbor spirilla, which are similar to and even identical with those demonstrated in rat bite fever in man. Any bite by animals, particularly rodents, should be considered as a possible source for this disease. Prophylactic administration of nearsphenamine may even be considered, and, in case of clinical evidence of the disease, nearsphenamine should be administered immediately, as animal inoculations in our case were not found to be positive before the fourteenth or sixteenth day.

384 Post Street

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS
HOWARD A. CARTER, Secretary

INDUCTOTHERM (ONE TUBE) ACCEPTABLE

Manufacturer: General Electric X-Ray Corporation, Chicago

In THE JOURNAL, May 11, 1935, page 1706 the acceptance of the General Electric Inductotherm (two tube) was published. Since then the General Electric X-Ray Corporation has designed a new unit, which is somewhat smaller but, according to the company's engineers, has the same power output. Instead of two tubes being used in this new machine only one tube is employed, but it is much larger and more efficient, thus giving approximately the same power with the one tube that was formerly developed by two smaller tubes. In order to obtain this power, however, it is necessary to be more careful about the placement of the coil applicator.

The physical and electrical tests showed that the electrical equipment was reliable and met the requirements of the Council. The shipping weight is approximately 200 pounds. A schematic diagram of the circuit is shown.

Tests similar to those performed by Mortimer and Osborne and reported in THE JOURNAL, April 20, 1935, were conducted in a clinic acceptable to the Council to determine the efficacy of the one tube model of the General Electric Inductotherm for producing heat in living tissues.

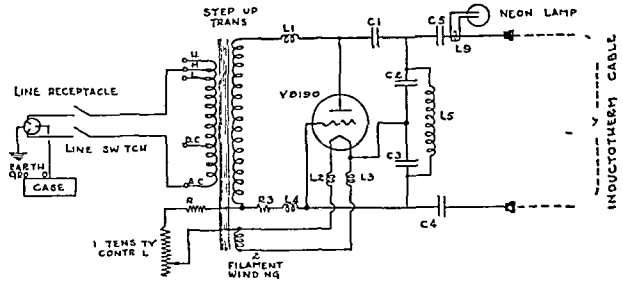
In all, eight tests were made on eight different subjects. Three turns of cable were wrapped around the human thigh, the coils being separated from the skin by three-fourths inch padding. The application time was twenty minutes.

The results obtained indicated that the final temperature in the muscle (quadriceps extensor) was 105.4 F, while the temperature rise was 68 degrees F, in the subcutaneous tissues the final temperature was 104.8 F and rise 7.6 degrees F, and on the skin surface under the padding the final temperature was 101.0 F and the rise 5.2 degrees F. The mouth temperature rise was 0.6 degree F. Each item aforementioned is the average of eight observations. The intensity of the current was governed by the patient's tolerance.

In a series of five fever treatments on different patients the average time the Inductotherm was on was about two hours and the average final rectal temperature was about 105 F. The average initial temperature was 99.04 F. The average rise was therefore 6 degrees, or 3 degrees per hour.

The technic employed was as follows. A treatment bag was opened and a full length rubber sheet to protect the bag from

perspiration was inserted. The rubber sheet was then covered with a terry-cloth blanket, folded once longitudinally. The open side was then placed toward the side of the bag having the opening for taking rectal temperatures. The patient was placed within the blanket with a terry-cloth blanket pinned as a shawl around his neck. A full size blanket was then placed over the terry-cloth covering the patient and the treatment bag closed. The 12 inch disk electrode was positioned approximately half over the chest and half over the abdomen of the patient. A full



Schematic diagram of circuit

length rubber sheet and a blanket were then placed over the disk electrode and the treatment bag.

The mattress on which the patient lies should be nonmetallic. If it is of the inner spring type, there is a possibility that intense currents may be generated in the springs, thus raising their temperature and igniting the inflammable part.

In view of the favorable report presented, the Council on Physical Therapy voted to include the Inductotherm (one tube type) in its list of accepted devices.

McKESSON RECORDING METABOLOR (No. 175) ACCEPTABLE

Manufacturer: McKesson Appliance Company, Toledo, Ohio

This unit is a closed circuit, wet spirometer, metabolism apparatus.

The estimation of metabolism is derived from a measurement of the volume of oxygen consumed during a given period of time. The consumption of oxygen is measured by a water spirometer, it is recorded on chart paper, which is carried across a vertical place from a spool rotated by an electric motor concealed in the base, the chart paper moving at a known, uniform rate. The determination is started with the spirometer containing an unknown volume of air rich in oxygen. Since the volume thrust of the spirometer is known, as well as the rate at which the chart paper is moved, the rate of oxygen consumption can be determined from the slope.

A "calculator" is furnished for determinations, the figures being carried to the second decimal place. If the calculator is not used one multiplication and one division are necessary for computations.

The apparatus is compact and appears to be well made. In use the device occupies space about 19 by 37 by 12 inches compact, it measures 16 by 16 by 12 inches its weight is about 33 pounds intact, including 5 pounds of water. The standard unit operates on 110 volt 60 cycle alternating current, but direct current units are available. The pen is directly connected to the counter-weight and automatically adjusts itself to the base line of the chart. The motor turns the paper at the rate of one inch per minute, the usual time for one test is six or eight minutes and the contents of the bell is from 5½ to 6 liters. The standard equipment includes large and small face inhalers, inhaler harness, large and small oral inhalers, nose clamp, chart roll (200 tests), quart can of soda lime, and a cover.

The machine was tested in a clinic acceptable to the Council and found to give satisfactory service. In view of this favorable performance the Council on Physical Therapy voted to include the McKesson Recording Metabolor in its list of accepted devices.

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SATURDAY, MARCH 28 1936

MEDICAL PROBLEMS CREATED BY THE FLOODS

The magnitude of the task for sanitary engineers and physicians created by the extensive floods in the East is only beginning to be realized. The flood menace is nothing new in the history of mankind, it has been one of the most terrifying of the natural phenomena recorded in legend and history. The health problems created by floods are naturally somewhat modified by their location, extent and season.

While it is impossible to distinguish sharply between the strictly sanitary problems and the direct danger of infectious disease, some division may be recognized. The sanitary problems are manifold. Perhaps most pressing is the water supply. Extensive contamination must have occurred in the large centers as well as in the rural districts. The floods of the past have done much to show the importance of immediate attention to this problem. Emergency measures, such as chlorination, filtration and boiling, must be established immediately. In some communities, force may be required to prevent the widespread ingestion of contaminated water by many people. An integral part of this program is the adequate disposal of sewage. The extensive utilization of chlorinated lime is advised as most immediately effective.

Food supply is only less important than water supply. The rapidity with which a crisis can be reached is evidenced by the riots for food which, newspapers report, occurred in the Pittsburgh district.

In some regions insect control, especially of malaria-bearing mosquitoes, is of enormous importance. In the Mississippi valley floods in the spring of 1927, screening for malaria was demanded. In some of the districts involved in the present floods this may again be important. The season of the year, however, makes the danger of these insects as well as of flies less significant than might be the case later on.

The sanitary factors are primarily concerned with the prevention of intestinal diseases. Typhoid fever, bacterial and amebic dysentery and paratyphoid infections are most likely. Much can be learned from past

floods as to the sanitary measures that can be employed to this end. The most extensive recent flood in this country was that of 1927, which involved Arkansas, Kentucky, Louisiana, Mississippi, Missouri and Tennessee. At that time measures were so efficient that there was in many states a lessened incidence of infectious disease as compared with that of previous years free from floods.

Hand in hand with the necessary sanitary measures must go the specific measures for disease prevention. Most important is typhoid immunization. In the 1927 flood approximately 500,000 complete typhoid immunizations were administered, and the demand for typhoid vaccine today will probably exceed considerably the demand at that time. Doubtless these immunizations have been begun on a large scale already. Smallpox vaccination is equally imperative. About 150,000 vaccinations for smallpox were given at the time of the Mississippi floods, and though it is probable that a somewhat smaller proportion of unvaccinated individuals reside in the present flooded areas, the demand for vaccine will undoubtedly be great.

The large number of individuals who have had to move out of their homes has necessitated in many instances crowding into small quarters similar to that which existed in the concentration camps at the time of the World War. Such crowding inevitably favors the propagation of epidemic disease. It is difficult to know what epidemic diseases might be most likely to become rampant. Certainly influenza and epidemic meningitis must be anticipated with the greatest possible vigilance.

Great disasters involving a large number of refugees require also special measures to prevent the spread of venereal diseases. The Mississippi floods of 1927 involved mostly rural communities, with large urban groups crowded together in the present floods, the prevention of the venereal diseases may be even more difficult.

Judging from past experience, it is probable that the diseases produced by direct exposure will be less than might be anticipated. For the most part they will involve only persons directly exposed to the elements for long periods of time, such as policemen, national guardsmen and those engaged directly in rescue work. The season of the year, however, enhances the possibility of the spread of the diseases caused largely by direct exposure. Of these the most important is unquestionably pneumonia. No doubt there will be a considerable increase in the number of cases of this disease over that ordinarily expected at this season of the year. Because of the recognition of this danger, however, many individuals will take somewhat better care to guard against it than they would under ordinary circumstances.

The menaces briefly mentioned here are some of the most obvious and easily predictable. In themselves they offer problems of gigantic proportions to public

agencies and to physicians. Unfortunately there are likely to be other and unexpected health complications. What these may be will probably not become known for some weeks after the emergency has largely passed. Some slight permanent benefit may be obtained from the fact that large groups of people are immunized to certain diseases and from the fact that some, for the first time, will learn the importance of sanitation and disease prevention.

REESTABLISHMENT OF MEDICAL R O T C UNITS

The medical reserve officers training corps units that were established between 1920 and 1922 in some of the leading medical colleges of the country graduated more than 6,000 students. The courses were conducted by officers of the medical Corps of the Regular Army. More than half of the Medical Reserve officers commissioned during the last ten years are R O T C graduates. Moreover the system has served to establish valuable contact between the Medical Department of the Army and centers of medical education. In times of national military emergency, expansion must obviously begin in these centers of medical education.

During the past four years the congressional appropriation acts for the support of the army have contained a provision that funds appropriated for the army R O T C units would not be available for medical R O T C units. As a result these units, which were established in twenty-four of the medical schools of the country, were curtailed year by year until the effect of the legislation in 1935 was to abolish them completely. This year, however, the Senate Committee on Appropriations has included provision for medical R O T C units. This would authorize the War Department to reestablish such units during the current year and would permit the department to set them up in each of the medical schools in which such units were previously conducted. The bill as passed by the Senate now goes to the House of Representatives.

The House of Delegates of the American Medical Association, at its annual session in 1935, adopted a resolution urging the reestablishment and maintenance of facilities for the preliminary military training of medical officers. Even the most ardent pacifist must recognize the necessity for an efficient medical corps in the army of any nation. The medical corps keeps out of military service those who are physically and mentally unfit. It conserves the health of those who enter the service. The physician who limits his activities to private practice cannot, however, be familiar with many procedures that are implicit in the work of the army medical officer. Army medical service demands knowledge of camp sanitation and hygiene, the keeping of efficient records, organization of hospital and special military units, and military precedents, rank and etiquette, which can be acquired only by suitable training. Obviously it is not practical to delay the training of

physicians in these matters until after hostilities have begun. Provision for such training in medical schools during times of peace will mean that the Medical Corps of the Army will have at all times available a considerable body of suitably trained men who may be called when occasion demands.

The act of Congress correcting the discrimination against medical reserve officers training corps units has already passed the Senate and, as previously stated, now goes to the House of Representatives, where it is known as H. R. 11035. In the ordinary course of business the Senate and the House will appoint conferees to adjust the differences in the bill as passed by the two bodies. The fate of the Senate amendment authorizing the establishment of medical units depends primarily, therefore, on the action of the conference committee. Favorable action will be hailed by the medical profession as a recognition of the importance of medicine in the scheme of national defense.

THE RÔLE OF ESTROGENIC SUBSTANCE IN TUMOR FORMATION

Evidence that the ovary may be implicated in the production of cancer of the breast has long been available. Twenty years ago Lathrop and Leo Loeb¹ demonstrated that ovariectomy in mice during the first few months of life definitely reduces the incidence of mammary cancer. Subsequent extirpation and transplantation experiments by Cori and by Murray extended these observations. When pure estrogenic compounds became available, attempts naturally were made to test the effects of injection of these substances on the production of mammary cancer. Thus, Lacassagne demonstrated that long continued administration of estrogenic substance to mice, of a strain in which only the females normally develop spontaneous mammary adenocarcinomas, leads to the development of such malignant tumors in the males. On the basis of these and other experiments the Council on Pharmacy and Chemistry² warned three years ago that 'the possibility [of deleterious effect from the clinical administration of estrogenic substance] deserves serious consideration, particularly if the large doses more recently employed clinically should come into common usage.' That the Council's admonition was warranted has become increasingly apparent as further experiments have confirmed and extended the earlier studies. Burrows³ and Bonser⁴ have confirmed Lacassagne's observations, and suggestive results have been reported by Loeb¹.

1 The literature is critically reviewed by Loeb Leo. *Estrogenic Hormones and Carcinogenesis* chapter XIII of *Glandular Physiology and Therapy*. Chicago: American Medical Association, 1935.

2 *Estrogenic Substances*. Theelin report of the Council on Pharmacy and Chemistry. J. A. M. A. **100**: 1331 (April 29) 1933.

3 Burrows Harold. Carcinoma Mammæ Occurring in a Male Younger Under Continued Treatment with Oestrin. *Am. J. Cancer* **21**: 613 (July) 1935.

4 Bonser G. M. Carcinoma of the Male Breast in Mice Induced with Oestrin. *J. Path. & Bact.* **41**: 217 (July) 1935.

More recently another investigation of this question has been published, Gardner and his co-workers⁵ injected large doses of estrogenic substance in oil into male mice of a high tumor rate strain. Mammary cancers developed in eight of the animals following treatment (this almost never occurs spontaneously in the males). One of the tumors grew rapidly on transplantation into other mice.

Much evidence is now available that estrogenic substances may predispose to the development of pathologic proliferation in tissues that normally respond to their presence by growth. In addition to breast tissue in both sexes, this has been noted in the uterine cervix and endometrium⁶ of the female and in the prostate and other genital organs of the male,⁷ in animal experiments. Evidence has also been adduced that estrogenic hormone is concerned in the production of uterine and breast tumors and even of prostatic hypertrophy in human beings.⁸ High titers of estrogenic principle have been noted in tumors of the breast and uterus.⁹

While further well controlled studies will be necessary to establish definitely the role of estrogenic substances in various pathologic proliferative processes (particularly the effects of the different compounds), present knowledge indicates the necessity for caution in the prolonged use of large doses, especially in patients in whom there is reason to suspect susceptibility to cancer.

Current Comment

EFFECT OF LIVER EXTRACTS IN EXPERIMENTAL AMEBIASIS

The elucidation of the role of dietary factors in the control of intestinal amebiasis is an important problem. The investigations of Faust and his collaborators have demonstrated the ameliorative effects of feeding raw liver or powdered liver extract to dogs infected by intracecal inoculation of *Endamoeba histolytica*, in some cases complete eradication of the protozoon occurred with this treatment alone.¹ However, the nature, identity and mechanism of action of the sub-

stance in liver responsible for these effects is not known. The active material is destroyed by heating in an autoclave at 17 pounds pressure for twenty minutes, it is apparently present largely if not chiefly in the liquid fraction of raw liver. Desiccated stomach has no ameliorative effect (but actually a deleterious effect) unless it has first been heated in an autoclave. The identity of the active substance with the antianemic principle has been questionable. Recently, Faust and Swartzwelder² have investigated the effect of purified liver extracts administered intramuscularly on experimental amebiasis in dogs. Fourteen infected animals were injected every two or three days with 2 or 3 cc of extract (each cubic centimeter representing 5 Gm of pig's liver), six dogs received a commercial extract and eight a special extract prepared by the investigators. Contrary to the effects of feeding liver or liver fractions, the extract administered intramuscularly failed to control the infection although the erythrocyte count was increased. Faust and Swartzwelder conclude that "the fraction of raw liver which is efficacious as an amebostatic agent is either different from that which [produces] erythropoiesis or its amebostatic action is inhibited when it is introduced intramuscularly."

SHORT WAVE DIATHERMY— "THE SHADOW"

In radio channels between 37 and 11 meters there has appeared of late a mysterious radio interference, said by radio engineers to be due to everything from "celestial invasions" to the malice of an "antisocial crank." Reports indicate that the interference has conflicted with commercial and amateur broadcasting, with some government stations and even with radio communications during the recent stratosphere flights. Now Prof. Harry Rowe Mimmo of Cruft Laboratory, Harvard University, seems to have traced the interference, in at least one instance, to a short wave diathermy machine used on the Harvard University campus. Professor Mimmo reports that code signals broadcast by the machine were picked up at the Naval Research Laboratory at Bellevue, D. C. Moreover, an editorial in the February issue of *Q S T*, the official organ of the American Radio Relay League (organization of radio amateurs known as "hams"), states that communication signals emanating in Boston were picked up by receiving stations at Norfolk, Washington, Bellevue and the Great Lakes. The short wave machine was not equipped with an antenna and the radio frequency energy was fed back into the power wires, hence the alternating current power supply system was the antenna. Each manufacturer of short wave diathermy equipment has his favorite wavelength or wavelengths and asserts that these are most efficient for therapeutic purposes. The Council on Physical Therapy of the American Medical Association does not accept the claim that one wavelength is more efficient than another. Since certain radio channels have been allocated to commercial, navy and army stations and also to amateur radio enthusiasts, manufacturers of short wave diathermy equipment could solve the question of interfer-

5 Gardner W. U. Smith G. M. Allen Edgar and Strong L. C. Cancer of the Mammary Glands Induced in Male Mice Receiving Estrogenic Hormone. *Arch. Path.* **21** 265 (March) 1936.

6 Overholser M. D. and Allen Edgar. Carcinoma of Cervix Following Theelin or Amniotin and Trauma. *Proc. Soc. Exper. Biol. & Med.* **30** 1322 (June) 1933. *Anat. Rec.* **55** No. 4 suppl. 32 1933.

7 The literature is too extensive for citation here. Among those who have made contributions to this question are David Korenchevsky, De Jongh Burrows, Frazier van Wagenen, Parkes and Overholser and their respective collaborators. See also Moore C. R. The Testis Hormone. chapter XVIII of *Glandular Physiology and Therapy*.¹

8 Geschickter C. F. Lewis Dean and Hartman C. G. Tumors of the Breast Related to the Oestrin Hormone. *Am. J. Cancer* **21** 828 (Aug.) 1934. Witherspoon J. T. The Estrogenic Principle: The Common Etiological Factor of Endometrial Hyperplasia, Uterine Fibroids and Endometriomas. *Surg. Gynec. & Obst.* **61** 743 (Dec.) 1935. Moore⁷ (A number of pertinent references have been omitted owing to space limitation).

9 The interpretation of some of these studies is in doubt in view of the observations of Frank with respect to the estrogenic titers of normal muscle tissue. Frank R. T. Goldberger M. A. Salmon U. J. and Friedman Reuben. Significance of Estrogenic Factor in Tumors and Tissues of the Human Female. *Proc. Soc. Exper. Biol. & Med.* **32** 1665 (June) 1935. Frank R. T. Sex Endocrine Factors in Blood and Urine in Health and Disease. chapter XVI of *Glandular Physiology and Therapy*.¹

1 Effect of Diet in Experimental Amebiasis. editorial. *J. A. M. A.* **104** 564 (Feb. 16) 1935.

2 Faust E. C. and Swartzwelder J. C. Use of Liver Extract Intramuscularly in the Course of Acute Amebiasis in Dogs. *Proc. Soc. Exper. Biol. & Med.* **33** 514 (Jan.) 1936.

ence by developing evidence to substantiate the efficiency of some one wavelength, which channel could then be assigned to them for therapeutic purposes. In the meantime those accused of interfering with radio communication may consult manufacturers as to proper methods of screening and minimizing interference.

Medical Economics

MEDICAL SOCIETY AGREEMENT FOR CARE OF THE INDIGENT SICK

Mahoning County Medical Society (Ohio) has recently entered into a contract with the county commissioners, for the giving of medical relief, that has some novel features. Entire control of the responsibility for medical care is vested with the county medical society. Fee schedules formerly set up under the FERA are accepted. The individual physician has no direct relations with the county relief agencies. All such arrangements are handled by the county medical society as a unit. The county medical society is made responsible for the character of the medical care and the discipline of its members. The agreement in full is given below.

AGREEMENT

This agreement between the County Commissioners of Mahoning County and the Mahoning County Medical Society

WITNESSETH

WHEREAS There is a temporary shortage of money for medical relief and

WHEREAS The physicians of Mahoning County are willing to arrange some practical and permanent plan of medical care for those on relief and

WHEREAS It is the agreement of the Mahoning County Medical Society and the Commissioners of Mahoning County that the fees formerly paid by Federal Relief to the physicians of Mahoning County are satisfactory for the present to both parties

NOW THEREFORE

It is agreed between the parties hereto

(1) That such fees shall be in effect until July 15 1936 at which time there shall be negotiations for a new fee schedule

(2) That the County Commissioners will not set up clinics for the treatment of any special type of disease

(3) That all matters relative to the conduct of practicing physicians in Mahoning County in their relations with the County Commissioners shall be subject to and passed upon by the Medical Economics Committee of the Mahoning County Medical Society

(4) That a board composed of the Economics Committee of the Mahoning County Medical Society one dentist one nurse one pharmacist and one representative of the hospitals be empowered by the Mahoning County Commissioners to suspend either temporarily or permanently any physician after a fair and impartial hearing whose conduct is unbecoming that of a physician and a gentleman and that this action will be final. That any practitioner of medicine found guilty of unprofessional conduct in his treatment of the indigent sick of Mahoning County shall have his name removed from the eligible list and shall not receive remuneration from Mahoning County for the care of the indigent sick of this county

(5) That the medical relief office be under the direct supervision of physicians who shall spend the necessary amount of time in that office to insure its proper and efficient operation. These physicians to be under the direction and supervision of the Economics Committee of the Mahoning County Medical Society

(6) That the manner of rendering bills be set up with no more red tape than is necessary. That an itemized statement and diagnosis be required. That red tape and clerical work be abolished. That bills so rendered be paid within thirty days after receipt of statement

(7) That the duties of the medical relief office be clearly and distinctly divorced from the office of the County Health Officer and the city health commissioners and that the County Commissioners deal only with the duly appointed committees of the Mahoning County Medical Society in regard to medical relief matters

(8) That under no circumstances are verbal conversations to be taken as authentic but that all orders intents etc be clearly expressed in writing and signed by the proper authority

(9) This agreement may be rescinded by either party on ten (10) days notice by either party to the other

IN WITNESS THEREOF the parties hereto have hereunto set their hands to duplicate copies hereof this
day of February 1936

MAHONING COUNTY MEDICAL SOCIETY

BY

MAHONING COUNTY COMMISSIONERS

WITNESSES

COMMENT

This agreement is distinguished by its simplicity and clarity. It is clearly based on the existence of a cooperative spirit between the county medical society and the county commissioners. The temporary and emergency character of the fee schedule is definitely recognized. The establishment of undesirable patterns of medical service, such as free clinics, is prohibited. While the county medical society is given direct supervision of medical service, there is a provision for arbitration of differences and discipline for conduct at variance with medical ethics or with the provisions of the agreement. Unnecessary red tape is definitely eliminated. A clear line of separation is drawn between the practice of medicine and the administration of public health. The emergency character is insured by a provision for termination with ten days' notice.

Association News

ANNUAL CONGRESS ON MEDICAL EDUCATION, MEDICAL LICENSURE AND HOSPITALS

Thirty Second Annual Meeting held in Chicago Feb 17 and 18 1936

DR FREDERIC A WASHBURN, Boston,
in the Chair

COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

FEBRUARY 17—MORNING

Report of the Council on Medical Education and Hospitals

DR RAY LYMAN WILBUR, Stanford University, Calif. Today medical education is one of the severest of all the mental disciplines. It requires a decade or more of thorough training of the mind and of the body. It demands both expert technical training and sound mental processes. The training of the hands and of the brain must go together. On looking over the last twenty-five years of medical education in the United States one finds that there has been an expansion of equipment personnel and curriculum to meet the expanding knowledge and the increased requirements of medical practice. A decade and a half ago in the attempt to cover everything there was an engorged and almost impossible curriculum. At the present time the stage of shaking the curriculum down to its fundamental core is being gone through. The survey of the medical schools that has been going on during the past year has brought out clearly the considerable variations in different parts of the country and the strange combinations of tradition, strong personalities, and the absence of necessary funds to do up-to-date educational work in most parts of some medical schools and in some parts of all, or nearly all, medical schools.

Sometimes extensive education and prolonged training are belittled by those who think there are short cuts to health and trick ways to recognize diseases and treat the sick. The calls on the young doctor are so various and so imperative that in our zeal we may have tried to be too inclusive in the multiplicity of subjects offered him. It is now essential that in every department in the medical school and in every part of the curriculum we should weigh, ponder, evaluate, choose and discard so that we shall not provide more than can be absorbed. The antique, the petty, the nonessential should be tossed aside by both the schools and the examining boards. Above all, the principles of biology, chemistry and physics must be the ever present substratum to the knowledge of body structure, physiology and pathology.

Since we can in no way fully prepare the physician for what he will actually do ten years ahead, we must provide him an understanding of fundamentals so that he can pick and choose. We cannot foresee what ten more years of medical research will bring. Compare the treatment of diabetes today with a few years ago and this point is clear. Nevertheless the young doctor must know the immediate actualities of every day in

the care of the sick and be abreast of the best of the days of his training. The required intern year is little enough to ask in the way of additional preparation beyond the classroom and the clinic. In some schools there still lurks the superstition that doctors can be made by textbooks, lectures and charts but only through the living, suffering human being can the care of the sick and the protection of the well be learned. This is the reason for our clinics, hospitals and nurses—forming the heart of our medical schools. The laboratory is simply more bedside equipment, not an end in itself.

Some academic teachers in all parts of the medical school are now a requisite for first-class work. I use the term "academic" rather than "full time" as I resent any such imputation in the university or medical school. A professor should meet his major obligations to his institution but should have a considerable part of his time under his own control to use for such research study or other enterprise as he may determine with his own knowledge of himself and what he can do and likes to do. In brief, all departments need some men on salaries to ensure good and steady work. To turn a class of medical students into capable physicians requires the energies and time of a comparatively large faculty on which there is some room for all kinds of talents and a variety of practitioners.

Medical centers are inevitable in all communities and the center formed by a medical school and its hospitals has the most promise of success. More and more the physician is becoming the agent of society. Medical economics is now generally recognized as a need of medical students, but little has been done about it. We are baffled as to how to proceed. We want the young doctor to know something about it, but not enough to break away from what are supposed to be our special traditions. Everything is becoming more costly as medicine becomes more scientific. The most striking finding of our survey of the medical schools is the lack of adequate funds, and the most glaring weaknesses of the schools could be largely cured with dollars. A continuation of large gifts and large appropriations for all our schools is requisite if there are to be adequate research, good training of the young physician, and excellent care of the sick. Next in significance to the training of medical students is the continuous and effective education of the doctor. Our largest cities are not yet great medical centers for postgraduate training, but a number of consequential steps have been taken.

So far as we have gone with this present survey, we have been impressed by the great improvements made and the fine spirit of the medical faculties, and with the large amount of sound research under way.

The Accrediting of Higher Institutions

GEORGE F ZOOK, PH D, Washington, D C. To any one who has studied the history of the professions it seems clear that they themselves should exercise extended control over the nature of the preparation which individuals should offer for entrance into them and even the number who are admitted to their privileges. Who, if not the members of the profession can be counted on to know its problems and to be a competent judge of the quality of its personnel? In the last twenty-five years medicine offers us the clearest demonstration of the fact that in America the members of a profession who are both wise and zealous will be accorded the most extended control over the development of their profession. Yet I believe that we are at the beginning of a new era which demands as much vision and courage to solve the problems of accrediting as our predecessors exhibited a generation ago.

In the first place the increasing success which attends the accrediting of individuals who enter medical schools as students tends to reduce the importance of accrediting educational institutions. Every time that, through the giving of a general intelligence test, a medical aptitude test or any other measure of probable success in medical schools we increase our ability to identify successful medical students, to that extent we make less necessary reference to the long list of accredited high schools and colleges in which they happen to secure their pre-medical education.

Secondly, I believe that the accrediting of medical colleges should be turned over largely to the medical colleges them-

selves. I believe that the present system of accrediting opens the profession to serious attack, perhaps unjustifiably, both from within and from without the medical profession. So long as so much illness and so many surgical needs go unattended there are those who will never be satisfied that the number of students in medical colleges should be reduced by the action of the medical profession, as is being accomplished in part through the visitation now under way. The opposition to the attempt to discontinue the accrediting of the two-year medical schools can be interpreted in no other way, I suppose, than as a warning from medical educators that the accrediting of medical schools is really their affair. It would seem indeed that the action of the Council on Medical Education and Hospitals in June 1933, accepting the statement of the Association of American Medical Colleges relative to admission requirements and the medical curriculum as an integral part of the requirements or "Essentials of an Acceptable Medical School," was a recognition of the jurisdiction of the colleges themselves in a matter of this kind. I am convinced also that the medical colleges for their own good, need to have the responsibility for their own accrediting. The period for policing medical schools is about over, or, to be more accurate, it will in the development of medical education be of less and less importance. The reduction in medical schools has been carried to the point at which hereafter there will be more and more division of opinion on all matters involving drastic action. The medical schools that have survived the early period of rigor have for the most part grown up into responsible organizations. Hereafter the real problem will be to set at work the forces for self improvement throughout the medical colleges of the country, to encourage those who are low in attainment to emulate the more successful institutions, and to stimulate even the best institutions to new and greater levels of achievement.

The stimulation of higher institutions to self improvement and superior standards can best be done through precept and example by those who are themselves engaged in the work. The first requirement is that institutions be able to cast aside, temporarily at least, outside restraints which inhibit experimentation with unconventional processes.

There is another process on which all accrediting agencies have placed great reliance, namely, that of inspection. An outside inspector, or inspectors who are known to be thoroughly competent and sympathetic can do more to jar an institution loose from a spirit of dull complacency than almost anything one can think of. I am convinced, therefore, that for purposes both of accrediting and of stimulation the device of visitation is highly desirable. The Council on Medical Education and Hospitals has wisely chosen as inspectors people out of the medical schools themselves who are known to be thoroughly competent. Nevertheless, the inspectors have represented essentially an outside organization. They have been received with a certain amount of trepidation almost everywhere. I venture the opinion that even in the better institutions the inspections have been too much in the nature of detailed criticisms. There is not enough of the element of friendly stimulation, which should be the keynote for the visitation at all institutions save those which may properly be regarded as marginal in character.

My last observation is that accrediting agencies in higher education should eliminate quantitative standards and go over completely to a frank attempt to evaluate qualitatively the processes and product of higher institutions. In the earlier days it was natural that good institutions should be defined in terms of physical plant, endowment, semester hours and faculty preparation. These criteria were quantitative and they were merely somebody's opinion. Furthermore, while they were crude measures they served their day well. But today when we are able to apply far more reliable measures of individual diagnosis and growth and when judgment as to both individual and institutional status may be rendered much more reliably than in those earlier days. We should cast off quantitative standards in favor of qualitative criteria in evaluating the work of higher institutions.

In recent years, the movement in medical education has been in the direction of qualitative criteria and away from quantitative considerations. Even the regulation concerning the specific number of semester hours in chemistry, physics, biology

and English have been removed and the Association of American Medical Colleges has gone on record as being opposed to premedical curriculums, preferring that students who enter medical schools should during their college years be not in any way set apart from other students

It is the duty of those interested in education to see that the evaluation of the schools and colleges is undertaken by those who are most competent and that they use criteria and methods which are valid and stimulating. Of equal importance is the fundamental conclusion that the present minimum specific standards for higher institutions should be replaced by optimum general criteria. The implications resulting from this radical change in policy will make it necessary to revamp the whole procedure of accrediting. It opens the way for an accrediting organization to expend the major part of its energy in a program of friendly stimulation and assistance to approved institutions.

DISCUSSION

GEORGE A. WORKS, Ed D., Chicago. Every active accrediting agency is faced by the local administrator who wishes it to protect him against his lack of vision, energy or courage and to give him guidance in details for which he and members of his staff should assume full responsibility. An accrediting agency should resist pressure of this character. Advice may be freely given, but the decisions should be made by those who are in immediate charge of the institution. No accrediting agency can take the place of ability, courage and vision on the part of those administratively responsible for a higher institution, and it should never attempt it. This means that as long as boards of control and executives, owing to a lack of vision or for ulterior purposes misuse their responsibilities the police function should be at hand as a means of protecting society. The third point relates to the substitution of qualitative standards for quantitative ones. Dr Zook called attention to the recent change made by the North Central Association in the substitution of its present statement of policy for its former standards. The emphasis of the latter was on quantitative requirements mechanically applied. The changed procedure has given a large share of the member institutions of the association a new attitude toward growth and development, a change that is distinctly for the better. But how Dr Zook, in Washington, was able to hear the "sigh of relief" that went up from colleges in the North Central territory and not at the same time hear the groans that arose immediately thereafter, when it was discovered that the new accrediting procedures involved a great deal of work is beyond my comprehension. In no quarter were these groans more audible than in the corner occupied by the medical institutions that were constituent parts of member institutions. As far as to why this change has come about so far as the member institutions are concerned, in their attitude toward the Association. It is due to the fact that there are no longer fixed standards mechanically applied, but we endeavor over a period of time to develop a pattern of every institution that we have in our membership. We don't attempt to say that the institution will be deprived of its membership or refused admission to the association on the basis of any single item or any two or three items, but we say on the basis of the picture it presents as a whole in comparison with the membership of the association. None of these are fixed because as the member institutions increase their expenditure per student that raises the hundred percent. What were regarded as minimum standards by the association came to be thought of by many members as maximum standards, and once an institution was in the association it had reached the haven of rest and no further progress was necessary. The institution that goes to sleep for two or three years finds that the majority of the membership has in that period been moving forward therefore it has lost ground and its membership in the association may be jeopardized. That fact alone plus the greater care with which we arrive at our data have completely changed the attitude of most of the members toward membership in the association.

REV. ALPHONSE M. SCHWITALLA, St. Louis. The method of antithesis that Dr Zook has employed labors to some extent from its own limitations. It stresses the north and south

poles and is apt to make one forget that there is an equator somewhere. Is it correct to stress an antithesis in the accrediting of institutions of higher learning by saying shall the accrediting be done by the profession or by the schools? There is a third possibility. It can be done by both. It can be done also by that other element that stands on the outside of the strictly accrediting process, namely the state boards. So, as I see it the accrediting that is now going on is an example to other agencies which have thus far not as yet used this technic. I think that the Council on Medical Education and Hospitals has introduced a new feature into the concept of the accrediting of higher institutions by stressing in its first pronouncement that the accrediting will not be done by the profession alone nor by the schools alone nor by the state boards alone but will be done by all those agencies interested in medical education. Now what is the unit of self determination that shall accredit the schools of medicine? I like to place the profession of medicine in the center of the picture with the educational activities that are proper to that profession on one side with the social relations of that profession on the other. The important thing in the picture is that the profession of medicine gives and gets stimulation from the adjoining neighbors and the integration of those factors is done by the profession of medicine rather than by the schools and in that I am by no means weakening my position I hope as an educator. But I am recognizing what Dr Zook and Dr Works have both stressed that after all the test of the educative process is going to be whether or not the product achieves the objective. We are in medical education not for the purpose of simply educating. We are in education for the purpose of achieving a product an end and that objective is the medical man who goes out to do his life work in our present social world.

DR J. N. BAKER, Montgomery, Ala. I speak from the standpoint of the licensing boards represented in this body. If our problem were only that of dealing with orthodox graduates it would be simple, but there are many different varieties that appear before licensing boards clamoring to treat diseases of human beings. There is our great problem. I have felt that if there were any defect in our medical schools, it was that they were so intensely absorbed with the individual problems of teaching that sometimes they lost sight of the difficult problems confronting those entrusted with medical licensure. It is a joining of hands of three agencies, the medical profession, the Association of American Medical Colleges and the licensing boards and the center of that picture should be the medical profession. Only with the coordinated effort and the integration of the three bodies that are so deeply interested in medical education and in seeing that the right sort of product is run through the schools to serve the general public will our object be attained.

Consistency versus Chaos in Medical Education and Licensure

DR. WALTER L. BIERRING, M.D., Des Moines, Iowa. All of the approved seventy-six medical schools in the United States and Canada have the same classification, yet a large gap is clearly evident between the different institutions. This is specially noted in the lack of unity in the general course of training. There is a further lack of coordination between the premedical and the medical sciences, and the relation of these courses to the clinical studies. An understaffing of the fundamental departments frequently exists with undue emphasis on clinical courses, particularly, in the medical and surgical specialties.

The American Board of Ophthalmology was organized in 1916 and of Otolaryngology in 1923, followed in 1927 by the formation of the American Board of Obstetrics and Gynecology, and of Dermatology and Syphilology in 1929. As other specialties began steps toward forming similar qualifying boards the need was recognized for some central agency or supervising body such as the Council on Medical Education and Hospitals of the American Medical Association for the purpose of coordinating graduate education and the certification of specialists in the United States and Canada. At the Milwaukee session of the American Medical Association in 1933, a resolution was adopted by the House of Delegates author-

izing the Council on Medical Education and Hospitals to formulate standards of administration in general based on those of the four specialty boards previously organized and to recognize new boards meeting these standards. To avoid duplication of effort as well as to coordinate the work of the several boards and other interested groups, it was deemed advisable to create an Advisory Board for Medical Specialties, which should be representative of each organization concerned. This advisory board began to function in February 1934. Since that time the American Boards of Pediatrics, Psychiatry and Neurology, Radiology, Orthopedic Surgery and Urology have been organized and officially recognized. The organization of the American Board of Internal Medicine is practically completed and the formation of the American Board of Surgery and of Pathology are making rapid progress, this within three years after this movement was inaugurated at Milwaukee. Special boards in the twelve recognized specialties will be established and hereafter only such candidates will be certified as have completed the required course of special training and been satisfactorily qualified in the particular specialty. There will be fewer medical specialists in the future, but those who *qualify will deserve the designation, for they will have passed the scrutiny of their peers.* Thus again it has come to pass that the medical profession has solved another of its important problems.

To cast a glance into the future a fact stands forth as having special implication for medical education: the restriction and higher qualification of the different medical specialists. In consequence of this and other evident tendencies the practitioner is being restored to an honorable place in the practice of medicine. It seems rather well established that only 15 per cent of those who become ill will require the services of a specialist, and thus 85 per cent of those who are sick as well as a large proportion of those who are well will come within the service of the general practitioner. This constitutes a distinct challenge to the educational forces that entails a number of distinct reforms in medical education which may be more clearly defined after the completion of the present resurvey of American medical schools. There appears to be a general objective of simplifying plans of instruction and a subtle change has come in the type or quality of medical learning, coincident mainly with the extension of our natural powers by mechanical devices. The erudite physician of another day seems to be passing. There is a growing feeling that medical education is tending in the direction of impersonality and that it is necessary to bring the patient again to the center of the medical student's interest. Premedical education as a prerequisite for the medical curriculum is regarded by many as far too technical. There is great need of reorientation of subject matter in the preliminary sciences. If we are correct in our conception of the sphere of service of the future practitioner, there is need of much reform in the training of the "basic" doctor.

DISCUSSION

DR. J. N. BAKER, Montgomery, Ala. During the chaotic early days of the present century, when diploma mills were plying their nefarious trade with reckless abandon, the licensing boards in each state took their tasks seriously, thereby making a substantial contribution to the purging processes of the Council on Medical Education and Hospitals and the Association of American Medical Colleges. Today, so satisfactory are the two last groups performing their tasks, that licensing boards appreciate the needlessness, so far as orthodox practitioners are concerned, of further written tests on their part. In short, were it not for the harassing hurdle of heterodoxy our problem would now be largely reduced to one of enforcement and the application of disciplinary measures. Unfortunately, problems in licensure cannot yet be solved by so simple a formula. Because of a general apathy or indifference or both on the part of the public and legislators toward elevated standards of licensure for those presuming to handle human ailments, various sorts of political compromises within the states still occur. Medical licensure being primarily a technical and professional problem, the medical profession, throughout this long struggle, has been out in the forefront, battling for the people's protection through a maintenance of high stand-

ards. Undoubtedly the zeal of the medical profession, spurred on by the apparent righteousness of its cause, has on many occasions been misconstrued by legislative bodies as acts of sheer selfishness. It seems difficult for the public to grasp the basic significance of legislative protection in the application of the healing arts and the fact that compromises with substandard training in this realm are not in the interests of sound public policy. The solution of most of the difficulties now being encountered seems to lie in education—education disseminated broadcast and wide through all strata of society as to the necessity for adequate scientific training before any one may be permitted, by law, to traffic in human life.

The State University and Professional Education

ARTHUR C. WILLARD, Urbana, Ill. It seems necessary to limit my discussion to professional education which is continued beyond the baccalaureate degree. In this educational area in recent years the yearly statistics on enrolments and graduates in typical fields have run about as follows: General post graduate schools beyond the bachelor's degree, 54,000 students, 17,000 masters' and 3,000 Ph.D. degrees. Law schools granting law degrees, 21,000 students and 5,400 graduates. Medical schools granting degrees in medicine, 22,000 students and 5,000 graduates. It is probably reasonable to assume that upward of 100,000 students are enrolled in graduate and professional schools and that between 14,000 and 15,000 graduates issue from these schools yearly, to say nothing of the 17,000 masters' degrees secured after only one year of postgraduate work.

The state universities, at least those which derived from the land grant college act of 1862, the Morrill act and subsequent acts of the federal congress, seem to have been conceived with the idea of providing a college education, largely at public expense in every state and territory. The existence or non-existence of private institutions in the same areas had nothing whatever to do with the matter. The industrial development in agriculture and the mechanical arts demanded scientific knowledge of a more technical or applied type than could then be secured in the existing institutions of college grade. It was a recognition of the need of professional training for industry. If college education, more or less at public expense, could be provided for farmers and mechanics, why not also for doctors, lawyers, bankers, teachers and many other groups concerned with our social, economic and industrial life? A tremendous expansion in college and university education has taken place in this country during the last half century on the assumption that more of everything was needed, from steel rails to professional education. Today any accredited high school graduate in any state or territory can secure a college education at practically little more expense than the actual cost of living at the state university. Free tuition scholarships are provided liberally at most state universities, for example at the University of Illinois about 2,500 such scholarships are available. The youth of our country has welcomed this opportunity and more than a million maybe a million and a quarter, of them attend our colleges and institutions of similar grade. Any one of these accredited high school graduates who can satisfy the requirements for a bachelor's degree is either already on his way into a profession or else is a potential candidate for further postgraduate work. In consequence of this growing popular interest in education at all levels the demand for education at the professional and graduate school level is raising many questions which are complicated in state universities by the fact that public funds are being spent for the personal benefit of a very small percentage of the population. The selection of these individuals is a matter of great importance since the only justification for spending public funds must always be found in the benefits or services returned to the public. I am convinced that we consider too few factors or qualifications in admitting students for graduate or professional study in our state universities. Mental, moral and physical qualities of a high order are necessary and should be demanded of every candidate for professional education. On the other hand the candidate should know as much as possible about the past and current conditions as well as future prospects in the field of his choice before he enters on his professional education.

I am not in favor of quotas to limit enrolment in state universities but I am in favor of professional societies keeping

in close touch with the professional schools and in rendering advisory services relating to their problems. I am also in favor of the maintenance of the highest educational and ethical standards in selecting students and preparing graduates to enter the various professions. The activities of the American Medical Association and the American Bar Association in the fields of professional education and practice have inspired other professional groups to undertake similar surveys for the purpose of advancing their professional interests and standards of education and practice.

DISCUSSION

EUGENE A. GILMORE, LL.B., Iowa City. While there is a tendency to push strictly professional education more and more into the graduate levels where undoubtedly most of it ought to be, we are still a considerable distance from this ideal. A university is the institution best fitted to provide adequate and liberal professional education, either at the undergraduate or the graduate level. Professional education can, to be sure, be achieved quite apart from a university. This professional education apart from a university is, however, usually narrow and excessively utilitarian in scope and is dominated by direct vocational objectives. The practitioner schools, which were the first substitute for apprentice training, were once held in high esteem as the most efficient means for professional education. They probably are still so held by some. Indeed, a rather vigorous survival of this esteem may even yet be found although the training has become associated with a university and may have become an integral part of a university. This survival manifests itself quite vigorously whenever it is proposed to reduce the time devoted to clinical work or to make any omissions from the overcrowded list of specific subjects about which it is thought the prospective doctor should have knowledge or to substitute for laboratory work in the medical school carried on under a doctor general research in the basic sciences carried on under a nonmedical man in the laboratories of the university. That there is still a preference in certain areas for professional education apart from a university is shown by the fact that, of the 193 law schools now operating, seventy-nine have no university connection. The medical profession is more fortunate (or unfortunate depending on one's point of view). Before the great housecleaning in medical education, there were a considerable number of medical schools not associated with a university. Of the present sixty-seven approved schools in the United States, fifty-nine have university association, more or less intimate. I have no doubt that professional education in law and medicine and in every other profession of a learned sort should be carried on as an integral part of a university and that there should be a very close relation between the professional group and the university group. In addition to the enrichment and improvement of medical science on its technical side through this association, there should come substantial progress toward the goal of a professional education in medicine which is less vocational and more liberal, and at the same time more efficient.

(To be continued)

RADIO BROADCASTS

The American Medical Association broadcasts over WEAf, the Red network instead of the Blue, as formerly, and certain additional stations of the National Broadcasting Company at 5 p.m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time, 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of Medical Emergencies and How They Are Met. The title of the program is 'Your Health'. The program is recognizable by a musical salutation through which the voice of the announcer offers the toast "Ladies and gentlemen, your health!" The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

Red Network—The stations on the Red network of the National Broadcasting Company are WEAf, WEEI, WTIC, WJAR, WTAG, WCSH, KYW, WFBR, WRC, WGY, WBEN, WCAE, WTAM, WWJ, WMAQ, KSD, WHO, WOW, WDAF.

Pacific Network—The stations on the Pacific network are KGO, KPO, KFI, KGW, KOMO, KHQ, KFSD, KTAR.

Network programs are broadcast locally or omitted at the discretion of the local station. The lists indicate stations to which programs are available.

The next three programs are as follows:

March 31	Hay Fever and Asthma	Morris Fishbein M.D.
April 7	Let Your Doctor Decide	R. G. Leland M.D.
April 14	Summer Camps	Morris Fishbein M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARIZONA

Society News—At the March meeting of the Maricopa County Medical Society, Phoenix, speakers were Drs. Dudley T. Fournier on 'Nonconvulsive Toxemia of Pregnancy', Benjamin Herzberg 'Modern Aspects of Treatment of Eclampsia', and Clarence B. Warrenburg, 'Hormone Therapy in Gynecology'. All are from Phoenix.—The ninth annual meeting of the Arizona Public Health Association and the short school for public health workers will be held at Tucson April 20-22.—Mrs. Kitty Ives Coleman has been employed on a temporary basis by the Arizona State Medical Association to assist Dr. Delamere F. Harbridge, Phoenix, secretary of the association. She will also serve as secretary for the Maricopa County Medical Society and the Maricopa County Library Board.

CALIFORNIA

Hospital News—Kern County supervisors, with counsel from eleven other counties as amicus curiae, have appealed to the supreme court the ruling of a lower court and the court of appeals enjoining Kern County supervisors from admitting nonindigent or pay patients to the county hospital.

State Association News—The sixty-fifth annual meeting of the California Medical Association will be held in Coronado, May 25-28. Guest speakers will include Drs. Campbell P. Howard, Montreal, Canada; Jacob J. Singer, St. Louis; and Franklin G. Ebaugh, Denver. Sunday, May 24, there will be two pathologic conferences on cancer, a clinical x-ray conference, a symposium on cancer for general practitioners, and a joint conference of association standing and special committees. The association has declared that x-ray and laboratory services cannot be divided into technical and professional divisions. It holds that x-ray diagnosis, laboratory services administering of an anesthetic and hydrotherapy constitute the practice of medicine. A Hall of Medical Science, containing 22,000 feet of exhibit space, was opened at the San Diego Exposition March 7, under the direction of the San Diego County Medical Society and the state medical association. Thirty-five exhibits are installed, including one of 500 square feet prepared by the American Medical Association.

Society News—Among others William Fowler of the California Institute of Technology, Pasadena, discussed 'Recent Developments in Physics' before the Los Angeles County Medical Association, March 19.—The annual meeting of the California Tuberculosis Association will be held in Sacramento April 3-4.—Dr. Francis D. Coman, Baltimore physician to the first Admiral Byrd expedition to the South Pole, discussed 'The Practice of Medicine in Little America' before the Hollywood Academy of Medicine, March 19.—At a meeting of the Society of Ophthalmology and Otolaryngology of Los Angeles, March 23, Dr. William P. Wherry, Omaha, discussed 'Postgraduate Education in Otolaryngology'. A viewpoint of the Examining Board for Otolaryngology, Dr. William L. Benedict, Rochester, Minn., 'Surgical Conditions of the Orbit', and Dr. Dean M. Lierle, Iowa City, 'Focal Infection in Arthritis'—Dr. John Alexander, Ann Arbor, Mich., addressed a joint

meeting of the tuberculosis section of the Los Angeles County Medical Society and the Clinical and Pathological Society, March 27 on "Advances in the Surgical Treatment of Thoracic Disease"

CONNECTICUT

Low Infant Mortality Rate—Connecticut recorded an infant mortality rate in 1935 of 43.2 deaths in the first year of life per thousand living births. There were 944 deaths reported and 21,860 living births. This is the lowest rate on record for the state.

The Ferris Lecture—Davenport Hooker, Ph.D. professor and head of the department of anatomy, University of Pittsburgh School of Medicine, delivered the third Harry Burr Ferris lecture in anatomy at Yale University, New Haven in the Sterling Hall of Medicine February 19 on "Early Fetal Movements in Mammals."

Society News—Dr. Newton E. Wayson of the U. S. Public Health Service discussed "Leprosy—Early Diagnosis in Children" before the Yale Medical Society March 11. Dr. Wilbur A. Sawyer, director of the International Health Division of the Rockefeller Foundation, New York, lectured in New Haven, March 13 under the auspices of the local chapter of Delta Omega, honorary public health society. His address was entitled "The Evolution of Our Ideas of Yellow Fever Epidemiology." Dr. William B. Castle, Boston, addressed the Tri-City Medical Society (Norwich, New London and Willimantic), February 6, in Norwich, on "Recent Advances in Blood Diseases."

FLORIDA

New Health Unit at Hollywood—A public health unit has been established in Broward County with Dr. Paul G. Shell formerly of Marianna in charge. The new unit will be maintained by Lauderdale, Hollywood and Broward County, their combined contribution of \$5,000 to be matched by a similar amount from the state and federal governments. Headquarters will be in Hollywood.

GEORGIA

Dr. McCord Named Professor—Dr. James R. McCord, professor of gynecology and obstetrics at Emory University School of Medicine, Atlanta on a part time basis has been named to a full time position it is reported. Dr. McCord graduated from Jefferson Medical College Philadelphia class of 1909. For several years he has been conducting extension courses in obstetrics throughout the United States in his capacity as senior medical officer and special representative of the Children's Bureau of the U. S. Department of Labor.

Society News—Drs. William Carter Smith and Launcelot Minor Blackford gave a paper before the Fulton County Medical Society, Atlanta March 19 on "Syphilitic Aortic Insufficiency." Dr. Hulett H. Askew read a paper entitled "Rectal Fistula and Its Treatment" before the society March 5. The Fifth District Medical Society was addressed in Atlanta March 27, by Drs. John C. Burch, Nashville on "Diagnosis and Classification of Menstrual Disorders." William Perrin Nicolson, Jr., Atlanta, "Carcinoma of the Breast." Murdoch S. Eguen, Atlanta, "Partial Esophagectomy for Cancer" and Virgil P. W. Sydenstricker, Augusta, "Recent Developments in the Problem of Pellagra." The Muscogee County Medical Society was addressed in Columbus February 13 by Drs. William W. Anderson and Milus K. Bailey, Atlanta on "Chest Conditions in Infants and Children" and "Problems in Pediatric Urology" respectively. At a meeting of the Fourth District Medical Society in Griffin February 12, speakers included Drs. Joseph C. Massee, Atlanta, "Pneumothorax and Other Measures in Treatment of Tuberculosis" and George L. Walker, Griffin, "Modern Treatment of Pneumonia."

ILLINOIS

Meeting on Stream Pollution—Health directors and sanitary engineers representing Illinois, Iowa, Minnesota, Missouri and Wisconsin attended a meeting in Chicago March 10 to consider a program of stream pollution abatement in the upper Mississippi drainage basin. State health directors in each of the states named have signed an agreement to cooperate in this program.

Annual Tumor Clinic—The sixth annual tumor clinic will be held at the Veterans Administration Facility—Edward Hines, Jr. Hospital, Hines, April 9. The clinic will begin at 2:30 in the afternoon under the direction of Dr. Max Cutler, Chicago, and staff officers of the tumor clinic of the hospital. Following dinner in the evening, Dr. Gordon B. New Rochester, Minn., will be the guest speaker.

CHICAGO

Interns' Banquet—The Cook County Hospital Interns Association will hold a banquet April 1 at the Congress Hotel at 7 p. m. Dr. Morris Fishbein will be the guest speaker. Mail or telephone reservations to R. A. Lifvendahl, 2400 South Dearborn Street, Victory 3520.

Dr. Grinker Appointed Chairman of Department—Dr. Roy R. Grinker, head of the division of psychiatry at the University of Chicago, has resigned to become chairman of the department of neuropsychiatry at Michael Reese Hospital. In accordance with plans of the hospital for the development of investigative interest in nervous and mental diseases, clinical and laboratory facilities for research in neuropsychiatry are to be opened for Dr. Grinker's purpose. Application for a research fellowship in neuropsychiatry beginning July 1 should be made to him.

Society News—At a meeting of the Chicago Ophthalmological Society, March 16, Dr. Edward V. L. Brown spoke on "Apparent Increases in Hyperopia Up to the Age of Nine," and Drs. Thomas D. Allen and Sanford R. Gifford discussed "Surgical Treatment of Retinal Detachment." The Chicago Society of Allergy was addressed March 16 by Drs. Milton B. Cohen, Cleveland, and Karl D. Figley, Toledo, on "Changes in Growth, Maturity and Mineralization Associated with Allergy" and "Iodized Oil in Intractable Asthma" respectively. Dr. Isadore Pilot discussed "Urticaria Due to Witte's Peptone." Dr. Charles C. Higgins, Cleveland, addressed the Chicago Urological Society, March 26 on "Experimental Production and Solution of Urinary Calculi with Chemical Application and End Results."

INDIANA

Symposium on Pediatrics—The Indianapolis Medical Society devoted two meetings, March 10 and 17, to a symposium on pediatrics. A discussion at the first session dealt with "Preventive Measures in Pediatrics" under the direction of Dr. Matthew Winters. Speakers were Drs. Herbert F. Call, Russell R. Hippensteel, Louis H. Segar and Howard B. Mettel. Clinical demonstrations by members of the staff of Riley Hospital made up the program for the second session.

Society News—Drs. Robert M. Moore and Cyrus Clark, Indianapolis, discussed coronary disease before the Montgomery County Medical Society, February 20. A symposium on oral pathology and its relation to internal medicine will be presented before the Indianapolis Medical Society, March 31, by Drs. Jeane Thayer, Waldo James O. Ritchey and Rollin H. Moser. Dr. Harry L. Alexander, St. Louis, discussed "Principles of Diagnosis and Treatment of Allergic Disorders" before the society March 3. Dr. Robert M. Moore, Indianapolis, addressed the Northeastern Indiana Academy of Medicine at Kendallville February 27, on coronary sclerosis.

Memorial to Physician—Funds are being solicited to establish a memorial in honor of the late Dr. William L. Hughes, Indiana Harbor. The committee in charge believes it is both fitting and proper that the life and services of Dr. Hughes be commemorated in some manner, and thus continue the memory of his splendid example of self-sacrifice in and for the community. A statement issued by the committee reads: "We believe Dr. Hughes did a great work, especially for children in a most unselfish manner, and no one was too poor to be denied his service and ability." Mr. William J. Murray, judge of the criminal court at Crown Point, is chairman of the committee. Rev. O. P. Manher is secretary and D. L. Mitchell, treasurer. Dr. Hughes died February 18.

KANSAS

Health at Kansas City—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million for the week ended March 14 indicate that the highest mortality rate (24.3) appears for Kansas City and the rate for the group of cities as a whole 14.1. The mortality rate for Kansas City for the corresponding period last year was 14.2 and for the group of cities 12.2. The annual rate for eighty-six cities for the eleven weeks of 1936 was 13.7 as against a rate of 12.9 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

Society News—At a meeting of the Ford County Medical Society in Dodge City, February 14, speakers were Drs. Laurence S. Nelson, Salina, on "Wertheim Interposition" and

George B Kent, Denver, "Surgical Management of Malignant Lesions of the Colon and Rectum"—Dr Raymond J Dittich, Fort Scott, addressed the Labette County Medical Society in Parsons, January 29, on "Treatment and Cure of Bone Infections"—The Washington County Medical Society was addressed in Washington, February 4, by Drs Arthur R Bryant and Robert W Taylor, Beatrice, Neb, on "External and Middle Ear Infections" and "Common Ocular Pathology with Suggestions for Treatment" respectively—At a meeting of the Tri-County Medical Society (Harvey, Marion and McPherson) in McPherson, February 12 Dr Ralph Bowen, Oklahoma discussed "The Practical Management of Allergic Problems as Seen in General Practice", Dr Clinton K Smith, Kansas City, "Prostatic Hypertrophy and Electrossection of the Prostate" and Dr Arthur Lloyd Stockwell Kansas City, "Practical Considerations in Spinal Anesthesia"

MASSACHUSETTS

Physicians Meet with Legislators—Members of the Massachusetts legislature from Worcester and vicinity were entertained at a dinner meeting by local physicians, February 21 Following the dinner, Dr William F Lynch president of the Worcester District Medical Society, introduced Dr Arthur W Marsh, Worcester, a member of the legislative committee of the state society, as master of ceremonies Various bills bearing on medicine and public health were discussed and Dr Charles E Mongan, Somerville president of the Massachusetts Medical Society, was a speaker

Society News—Dr Frank H Lahey, Boston, addressed the Arlington Doctors' Club March 10, on "Diseases of the Thyroid and Parathyroids"—Dr Kendall Emerson, New York will speak at a joint meeting of the Massachusetts Tuberculosis League and the Hampden County Tuberculosis and Health Association in Springfield April 8—At a meeting of the Greater Boston Medical Society, January 7, speakers included Dr Boris E Greenberg on "Visualization of Postgonorrheal Complications"—Dr Elliott C Cutler, Boston will address the William Harvey Society of the Tufts College Medical School, April 10, on "War Surgery"—Dr Alexander Lambert formerly professor of clinical medicine, Cornell University Medical School, addressed the society, March 13, on "Therapeutics of Drug Habits"—At a meeting of the New England Heart Association in Worcester, February 24, Drs Oliver H Stansfield and Edward J Halloran discussed Effects of Contagious and Infectious Diseases on the Heart", Dr Frank B Carr, 'Acute Benign Pericarditis,' and Dr John J Dumphy, 'Coronary Symptoms in Pernicious Anemia'—The New England Physical Therapy Society was addressed in Boston February 19 by Leslie L Campbell, PhD, for many years professor of physics Simmons College, Boston "Elementary Physics of Galvanism," and Drs Frederick H Morse, Hiram Houston Merritt and Claude L Payzant, "Clinical Uses of Galvanic Current"

MICHIGAN

Personal—Dr John L Burkhart for many years city health officer of Big Rapids, has been appointed postmaster—Dr Robert F Berry has been appointed superintendent of Morgan Heights Sanatorium, Marquette

Society News—Dr John A Hookey, Detroit, addressed the Monroe County Medical Society, February 20, in Monroe on 'Treatment of Eczema'—At a meeting of the Jackson County Medical Society in Jackson February 18 Dr Robert H Durham discussed 'The Protein Manifestations of Thyroid Insufficiency'—Speakers before the Detroit Otolaryngological Society, March 18 were Drs Derrick T Jr and Harris H Vail both of Cincinnati, on "Ophthalmic Origin of Headache" and 'Practical Considerations of Vidian Neuralgia' respectively

New Dean at Wayne University—Dr Raymond B Allen, associate dean of graduate studies Columbia University College of Physicians and Surgeons New York, has been named dean of Wayne University School of Medicine, Detroit He succeeds Dr Walter H MacCraken, who resigned last year Dr William J Stapleton Jr, who has been acting dean of the school, will become associate dean when Dr Allen takes over his duties, May 18 Dr Allen is 33 years of age He graduated from the University of Minnesota Medical School Minneapolis in 1928

The So Called "Filter System" for Handicapped Children—On January 28 eighty-two counties all but one in the state had reported the creation of a county medical society public relations committee, a medical filter and an economic

filter in accordance with an agreement between the Michigan State Medical Society, the Michigan Probate Judges Association and the Michigan Hospital Association Under this system, afflicted and crippled children of the state will be examined and their economic status determined Those able to pay will be 'filtered' back to their family physicians, physicians caring for children unable to pay will be paid with funds from a specific appropriation by the state The medical filter is a committee composed of three physicians selected by the county medical society to give a thorough physical examination to applicants for hospitalization, while an investigating committee representing the probate court and the county medical society will examine the applicants' economic status No applicant will be committed by a probate judge unless he has received the proper certificate from an authorized member of the committee that the case is urgent The state medical society was instrumental in drafting the filter system, which was adopted after it was made known that the funds appropriated by the state to care for afflicted and crippled children were running low The law specifically states that physicians should be paid, but except for a brief period of a few weeks the work has been done free of charge on account of the lack of appropriated funds The state has sufficient money to pay for this care, but the funds were not specifically allocated The chief cause for complaint was the looseness of the system, which permitted any one to receive medical care at state expense, with the physician donating his services, it was stated

MINNESOTA

Mayo Foundation Lectures—Mr L R Broster, London, gave a lecture at the Mayo Foundation Rochester, February 27 entitled Eight Years Experience on the Surgery of the Adrenal Gland with Reference to the Adrenogenital Syndrome" Dr Arthur G Sullivan, Madison Wis, lectured, February 10, on Medicolegal Problems in Medical Practice"

Abortinist Sentenced—Mrs Ida Bare pleaded guilty in the district court of Ramsey County, March 4, to a charge of performing an illegal operation and was sentenced to a term of not to exceed two years at hard labor at the Woman's Reformatory at Shakopee The operation resulted in the almost instantaneous death of the patient, it was stated

Memorial to Dr Johnson—Plans are under way to establish a memorial to the late Dr Herman M Johnson, Dawson Members of the Minnesota State Medical Association will be asked to contribute to a fund, which, it is expected, will be used to maintain a lectureship in medical economics Dr Johnson, who died last year, was president of the state association and medical superintendent of the Dawson Surgical Hospital He was instrumental in passing the basic science law in Minnesota In 1926 and 1927 and from 1929 to 1935 he was a member of the House of Delegates of the American Medical Association

NEW JERSEY

Society News—Dr David W Kramer, Philadelphia, addressed the Gloucester County Medical Society Woodbury, February 21 on Advances in Treatment of Peripheral Vascular Disease"—Drs Oswald S Lowsley and Francis P Twinn, New York, addressed the Bergen County Medical Society, Englewood, March 10, on 'Some Aspects of Prostatic and Renal Surgery' and 'Treatment and Prevention of Urinary Calculus' respectively Dr William G Herrman, Asbury Park a vice president of the Medical Society of New Jersey, spoke on activities of the state society

NEW MEXICO

Society News—At a meeting of the Grant County Medical Society, Silver City, in January case reports were presented, among others by Drs Nathaniel D Frazin and Russell C Lane, Silver City, on encapsulated tumor of the lung, Mycellus McCreary Fort Bayard abscess following antisyphilitic injection followed by negative Wassermann reaction Dr Frazin also presented a case of tuberculous infection of the metatarsal bones

New Crippled Children's Hospital—WPA funds have been assured for construction of a new hospital for crippled children at Hot Springs and ground was broken at a recent ceremony, *Southwestern Medicine* reports Work is to start immediately on the hospital which is to cost about \$400,000 It is to have a capacity of eighty-four beds All but one building will be of one story There will be an outdoor swimming pool connected with an indoor treatment pool

NEW YORK

Typhoid at County Home—Three persons had died and eleven others were ill in an outbreak of typhoid at the Genesee County Home, near Batavia, newspapers reported March 15. It was suspected that the source of the infection was creek water used for drinking.

Dr Butler Appointed to State Hospital Service—Dr Ethan Flagg Butler, Elmira, has been appointed chief thoracic surgeon for the state tuberculosis hospital service. After the opening of the Biggs Memorial Hospital, Ithaca, Dr Butler will make his headquarters there but for the present he will divide his time between the Oneonta and Mount Morris hospitals. Dr Butler has at various times served on the staffs of Walter Reed General Hospital, Washington, D C, Bellevue Hospital New York and Robert Packer Hospital, Sayre Pa. He was president of the American Association for Thoracic Surgery in 1931.

New York City

WPA Funds for Venereal Disease Campaign—An appropriation of \$100,000 has been approved by the Works Progress Administration to be used to aid the department of health in a campaign to control venereal disease. The funds will provide equipment and supplies and work for 127 persons of whom ninety-seven are physicians and nurses. It was said a pavilion at the Kingston Avenue Hospital, Brooklyn, has been set aside by the department of hospitals for treatment of persons with venereal disease and a special bureau for control of these diseases has been established in the health department under the direction of Dr Charles Walter Clarke.

Salmon Memorial Lectures—The Salmon Committee on Psychiatry and Mental Hygiene announces that the fourth series of Thomas William Salmon Memorial Lectures will be presented by Dr Samuel T. Orton, professor of neurology and neuropathology, Columbia University College of Physicians and Surgeons, April 10, 17 and 24 at the New York Academy of Medicine. The general subject of the lectures will be 'Developmental Disorders of the Language Faculty and Their Psychiatric Import'. Individual lectures will be: April 10, 'Language Losses in the Adult as the Key to the Developmental Disorders in Children'; April 17, 'The Syndromes of Disorder in the Development of Language'; and April 24, 'Treatment and Psychiatric Interpretation'.

Edgar Sydenstricker Dies—Edgar Sydenstricker, scientific director of the Milbank Fund and for many years chief statistician of the U S Public Health Service, died March 19 of cerebral hemorrhage, aged 54. He was born in China and came to the United States in 1896. After graduating from Washington and Lee University in 1902, Mr Sydenstricker was a teacher and newspaper man for several years. From 1908 to 1915 he directed industrial community studies for the U S Immigration Commission and the U S Commission on Industrial Relations and in the latter year was appointed to organize the statistical work of the public health service. He was one of the organizers of the health section of the League of Nations in 1923 and 1924. Since 1925 Mr Sydenstricker had been in charge of research and public health activities of the Milbank Fund and in April 1935 became administrative head with the title of scientific director. He was a member of President Hoover's Committee on Social Trends in 1931-1932 and of President Roosevelt's Committee on Economic Security in 1934-1935.

NORTH CAROLINA

Society News—Dr Hugh Cabot Rochester, Minn., addressed the Forsyth County Medical Society, Winston-Salem, February 17, on 'Tumors of the Kidneys'. Speakers at a meeting of the Fourth District Medical Association in Wilson, February 11, were Drs Isaac H. Manning, Chapel Hill, on hospital insurance; Malory A. Pittman, Wilson, pelviccephalometry; and Hugh A. Thompson, Raleigh, traumatic surgery.

OHIO

Personal—Dr Jonathan Forman, Columbus, has been appointed editor of the *Ohio State Medical Journal* to succeed Dr Leslie L. Bigelow, Columbus, who resigned in December. Dr Forman graduated from the old Starling-Ohio Medical College in 1913 and served on the faculty after the school was merged with Ohio State University College of Medicine. Dr Donald E. Yochem, Columbus, has been appointed medical director of the Cooperative Life Insurance Company of America.

Outbreak of Gastro-Enteritis—About 1,500 cases of gastro-enteritis were reported to the state department of health, February 20, from Coshocton. According to an investigation

made by Dr William P. Johnson of the health department, Columbus, symptoms were nausea followed by vomiting, cramps, diarrhea, slight fever, chilliness and aching. The victims recovered within from twenty-four to thirty-six hours. The city water was suspected of being the source, as no other common factor was found. However, samples sent to the state laboratory showed no evidence of contamination.

Society News—Dr Robert A. Lyon, Cincinnati, addressed the Clermont County Medical Society, Williamsburg, recently on advances in treatment of contagious diseases. Dr Stanley E. Dorst, Cincinnati, presented a paper on 'Specific Serum Treatment of Pneumonia' before the Hancock County Medical Society, Findlay, February 6. Dr Jay Arthur Myers, Minneapolis, addressed the Lorain County Medical Society, Lorain, February 11, on diagnosis and treatment of tuberculosis. Dr Charles M. Clark, Akron, discussed 'Infections of the Nose and Throat as Related to Diseases of the Lower Respiratory Tract' as guest of the Portage County Medical Society, Ravenna, February 6. Drs Louis Feid Jr and Charles R. Deeds, Cincinnati, addressed the Stark County Medical Society, Canton, February 4, on 'Uterine Bleeding' and 'Rectal Bleeding' respectively. Dr Chesterfield J. Holley, Wheeling, W. Va., discussed 'Significance of Anal and Rectal Pain' at a meeting of the Belmont County Medical Society, Bellaire, February 6.

PENNSYLVANIA

Flood Stricken Town Quarantined—The town of Sunbury in the flood area, was placed under quarantine by the state health department, March 20, when ninety cases of scarlet fever, diphtheria, measles and chickenpox were reported. Three-fourths of the town was said to be under several feet of water with 4,000 persons homeless. Physicians, nurses and relief workers were said to be using motorboats, rowboats being useless in the swift currents. National guardsmen barred all but relief workers from the town.

Society News—Dr Russell L. Haden, Cleveland, addressed the Cambria County Medical Society, Johnstown, March 12, on 'Study and Treatment of Anemia'. Dr Frank R. Hanlon, Wilkes-Barre, addressed the Northampton County Medical Society, Easton, February 21, on 'Management of Acute Erysipelas'. Drs Harry J. Robb, DuBois, and Roger E. Phillips, Philipsburg, among others, addressed a joint meeting of the Centre and Clearfield County medical societies in Clearfield, February 20, on 'Angina Pectoris and Coronary Occlusion' and 'Office Management of Diabetes' respectively.

Philadelphia

Annual Clinical Lectures—Mercy Hospital will present its fourth annual clinical lectures March 30-April 3, two each afternoon. Following are the speakers:

Monday	Drs Howard Childs, Carpenter	Value of Periodic Physical Examinations of Children
Tuesday	Drs Edward A. Schumann, DeForest P. Willard	Difficult Labor—Chester A. Jackson
		Diseases of the Esophagus and Stomach—Endoscopically Considered
Wednesday	Drs Hermann Prinz, David Riesman	Common Diseases of the Oral and Mucous Membrane
		Diagnosis and Treatment of Early Circulatory Failure
Thursday	Drs Herbert L. Northrop, Willard H. Kinney	Miscellaneous Highlights of Surgery
Friday	Drs Catherine Macfarlane, Randle C. Rosenberger	Dysfunctional Uterine Bleeding
		Diseases Now Considered as Due to Filtrable Viruses

Society News—Speakers before the Pathological Society of Philadelphia, March 12, were Drs Max B. Lurie on 'Mechanism of Immunity in Tuberculosis', The Role of Some Cellular and Acellular Factors; Lawrence W. Smith, 'Certain Pathologic Changes in the Heart in Scarlet Fever'; and Virgil H. Moon and David R. Morgan, 'Pathologic Features Following Shock with Delayed Death'. Dr Walter Freeman, Washington, D. C., addressed the Philadelphia Psychiatric Society, March 13, on 'Constitutional Factors in Relation to Mental Disease'. Three Pittsburgh physicians presented the program of the Philadelphia County Medical Society, March 25, on diseases of the thyroid. Dr William J. Fetter discussed incidence and diagnosis; Dr William L. Mullins, cardiac manifestations; and Dr John P. Griffith, surgical treatment. Drs Robert A. Kimbrough Jr. and Robert M. Shirey presented a 'Statistical Survey of Eclampsia' before the Obstetrical Society of Philadelphia, March 5, and Dr Douglas P. Murphy spoke on 'Reproductive Characteristics of Families Having Malformed Children'. James L. Weatherman, A.M., and Charles Robb of the University of Pennsylvania Graduate School of Medicine, among others, addressed the Philadelphia Roentgen Ray Society, March 5, on 'Saturation Technique as a Procedure in Giving Radiation'.

RHODE ISLAND

Society News—Drs John T Farrell and James Murray Beardsley, Providence, addressed the Providence Medical Association March 2, on "Roentgenologic Differential Diagnosis of Nontuberculous Diseases of the Lung" and "Bronchiectasis" respectively. Drs Soma Weiss, Boston, and Russell S Bray addressed the association, February 3, on "Clinical Significance and Management of Syncope" and "Nontropical Sprue" respectively. The Rhode Island Medical Society will hold its annual meeting June 3-4 at Providence.

Bills Introduced—S 179 proposes to grant liens to physicians, nurses and hospitals, treating persons injured through the fault of others, on judgments, settlements or compromises accruing to the injured persons by reason of their injuries. S 181 proposes to restrict the sale of those proprietary medicines and ordinary household remedies and drugs, to which the provisions of the pharmacy practice act do not now apply, to shops and stores specifically so licensed by the chief of the division of narcotic drugs and pharmacies. H 780 proposes to repeal the present law requiring the licensing of maternity hospitals and to enact in its stead a new law requiring maternity hospitals to be licensed annually by the state department of public health. The bill proposes that "any person who receives for care and treatment during pregnancy or during delivery or within ten days after delivery, any woman except women related to him or her by blood or marriage, shall be deemed to maintain a maternity hospital." No such license to conduct such a hospital can be issued by the department of public health until after careful investigation it finds the hospital premises to be in a fit sanitary condition. The department is to be given the authority to issue general regulations and rules for the conduct of all such hospitals. Every birth occurring in a maternity hospital must be attended by a legally qualified physician or midwife. H 795, to amend the laws relating to coroners and medical examiners, among other things proposes that on the passage of the bill "the terms and services of the several medical examiners now holding office shall be deemed to have ceased and terminated, and thereupon the attorney general shall appoint medical examiners." H 826 proposes to require, as a condition precedent to the obtaining of licenses to wed, both parties to proposed marriages to present certificates from licensed physicians that they are not afflicted with syphilis or in a stage of that disease that may become communicable.

WASHINGTON

Personal—Dr John W Darrough Everett, was recently appointed health officer of that city.—Dr John W Stevenson, Hoquiam, has been appointed health officer of Grays Harbor.

Society News—Dr Alexander B Hepler, Seattle addressed the Walla Walla Valley Medical Society, Walla Walla, March 12, on "Urology from the General Practitioner's Viewpoint".—Drs Charlton E Hagyard and Harry L Leavitt addressed the King County Medical Society, Seattle March 16, on 'Acute Pancreatic Necrosis' and Scoliosis respectively.—Dr Paul G Clothow, Seattle, addressed the Clallam County Medical Society, Port Angeles, January 22 on the sympathetic nervous system.—Drs William H Goering, Tacoma and Ira O McEmore, Seattle, addressed the Cowlitz County Medical Society, Longview, February 11, on orthopedic surgery with reference to crippled children.—Dr Delmar F Bice Yakima president of the Washington State Medical Association addressed a joint meeting of the Whatcom and Skagit county medical societies in Bellingham, February 3 on state medicine.—Dr James M Bowers, Seattle presented a paper on diseases of the chest before the Yakima County Medical Society, Yakima, February 10.

WEST VIRGINIA

Society News—Dr William F Rienhoff Jr, Baltimore, addressed the Ohio County Medical Society, Wheeling January 31, on 'Surgical Treatment of Diseases of the Bronchi and Lungs'.—Drs Edward J Van Liere and Frederick R Whittlesey addressed the Monongalia County Medical Society, Morgantown, February 4, on 'Effect of Low Oxygen Tension on Movements of the Stomach' and 'Low Oxygen Tension in Disease' respectively.—The Central West Virginia Medical Society met in Sutton, February 27 with the following speakers all of Columbus Ohio: Drs Samuel D Edelman 'Preventive and Curative Measures in Diseases', Frank W Harrah 'Transurethral Resections of Vesical Neck Obstructions' and William B Morrison 'Diagnosis and Treatment of Carcinoma of the Stomach'.—Dr Claude C Coleman Richmond, Va, addressed the Harrison County Medical Society Clarksburg February 5, on diagnosis and treatment of brain tumors.

GENERAL

Prevalence of Meningitis—Three hundred and seven cases of meningococcic meningitis were reported to the U S Public Health Service during the week ended February 29, in the corresponding week of 1935, 154 cases were reported. Seven deaths had occurred and strict quarantine was imposed in Texarkana Texas, February 23, according to newspaper accounts. Eight deaths had occurred in Quincy, Ill, the Chicago Tribune reported March 17. Thirty cases were reported in North Carolina during January and February, with several deaths. Work was suspended at a coal camp in McCreary County, Ky, March 2, after two miners had died of meningitis. McCreary is in the southeastern section of the state near Harlan County, where a serious epidemic has occurred. In Charleston S C, forty-seven cases have been hospitalized at Roper Hospital, thirteen from the county, it was reported March 3. Several schools in the county were closed.

Society News—Dr Edwin M Neher, Salt Lake City, was chosen president of the Western Ophthalmological Society at the third annual meeting in Pasadena, Calif, January 25. Dr Frederick C Cordes, San Francisco, was named vice president, and Dr Andrew J Browning, Portland, Ore, secretary. The next annual session will be held in Denver, in connection with the summer course conducted by the Colorado Congress of Ophthalmology and the Colorado University School of Medicine in July 1937. Speakers at the recent meeting included Drs John E Weeks Portland Ore, on "The Amblyopia of Arsenical Therapy", Harold F Whalman, Los Angeles, 'Hodgkin's Disease of the Eye' and David O Harrington, San Francisco, 'The Optic Radiation in the Temporal Lobe, with Case Report of Perimetric Studies in Complete Removal of the Temporal Lobe'.—The American Association on Mental Deficiency will hold its sixtieth annual meeting at the Hotel Jefferson St Louis May 1-4. The Friday sessions will be devoted to general and sociological aspects of mental deficiency, while the Saturday sessions will be given over to psychological and educational topics with stress on educational disabilities. Monday will be devoted to research activities, medical aspects and administrative problems in mental deficiency. Additional information may be obtained from the secretary, Dr Groves B Smith, Godfrey, Ill.—Dr James H Means, Boston was chosen president-elect of the American College of Physicians at the annual session in Detroit, March 5, and Dr Ernest B Bradley Lexington Ky, was installed as president. Vice presidents are Drs O H Perry Pepper, Philadelphia, David P Barr, St Louis and Walter L Bierring, Des Moines. The next meeting will be in St Louis.

Medical Bills in Congress—*Changes in Status* S 2625 has passed the House extending the facilities of the Public Health Service to seamen on government vessels not in the military or naval establishments. H R 3629 has been reported to the Senate authorizing the acquisition of additional land for the use of Walter Reed General Hospital. *Bills Introduced* S 4310 introduced by Senator Black, Alabama, proposes to appropriate \$1 750 000 to erect, in the state of Alabama, a hospital for the diagnosis, care and treatment of neuropsychiatric patients entitled to hospitalization under the World War Veterans' Act as amended. H J Res 527, introduced by Representative O Leary, New York, proposes to make the facilities of the United States Marine Hospital at Stapleton, N Y available for World War veterans in Richmond County, N Y. H R 11826 introduced by Representative Hoeppel, California, proposes to reenact all laws in effect March 19, 1933 granting hospitalization and domiciliary care to veterans of the Spanish-American War, including the Boxer Rebellion and the Philippine Insurrection. H R 11827, introduced by Representative Secrest, Ohio, proposes to establish a Bureau of Veterans Affairs in the Department of the Treasury and to revise generally the laws relating to veterans. The bill among other things would provide domiciliary and hospital care including medical treatment, to all retired officers and enlisted men of the United States army, navy, marine corps or coast guard who served in any war, irrespective of the origin of the disease, disability or defect necessitating domiciliary or hospital care and irrespective of the financial status of that officer or enlisted man. Furthermore, domiciliary and hospital care including medical treatment, would be furnished to any veteran not dishonorably discharged who is unable to defray the expenses thereof within the limits of the facilities of the Veterans Administration, irrespective of the origin of the disability disease or defect. Any individual who served overseas as a contract surgeon of the army would be entitled

to the benefits proposed by the bill H R 11951, introduced by Representative McGehee Mississippi, proposes to compensate persons disabled by the use of improperly made Jamaica ginger

Government Services

Annual Report of the Navy

The leading cause of death in the U S Navy during 1934 was motor vehicle accidents, according to the annual report of Surgeon General Rossiter. Fifty of the 299 deaths reported were attributed to these accidents, which also headed the list in 1930, 1931 and 1932. In 1933 the leading cause of death was aeronautic accidents. An increase was noted in the general admission rate. 57,271 admissions from all causes gave a rate of 523.58 per thousand persons in the navy. This rate compared with 477.03 per thousand reported in 1933, the lowest rate ever recorded. The increase in 1935 was due chiefly to increases in acute catarrhal fever, acute bronchitis, measles, German measles and bacillary dysentery. From the standpoint of major injuries there were no disasters in 1934. There were 473 cases of influenza reported with no deaths, the admission rate was 432 as compared with 364 in 1933. The admission rate for wounds and injuries was 64.32 per thousand as compared with 63.21 per thousand for 1933. There were 6,995 admissions for accidental injuries and poisonings in 1934 as compared with 6,800 in 1933, 26 per cent of the injuries were sustained by naval personnel when absent from their commands. Forty-eight of the fifty deaths chargeable to motor vehicles were the result of injuries received while on leave or liberty. Athletics and recreative sports were responsible for 1,412 admissions and six deaths. Suicide was responsible for forty-six fatalities and drowning for twenty-eight. There were 377 admissions for mumps during the year. 360 for measles, 1,118 for German measles, and four cases of diphtheria. Acute catarrhal fever was responsible for 10,910 admissions as compared with 6,569 in 1933, giving a total of 51,727 sick days. There were forty-nine admissions for scarlet fever. No case of smallpox was reported. There were 178 admissions for tuberculosis. There were 39,783 sick days reported for all forms of tuberculosis. Seventeen deaths occurred from this cause. Malaria was responsible for 220 original admissions with 6,039 sick days in fifty-nine cases the disease was said to have existed prior to enlistment. A total of 500 admissions was recorded for Vincent's angina, making the admission rate 457 per hundred thousand persons. This is the lowest admission rate since 1924, the first year in which cases were reported under this title. There were eighty-four admissions for dengue, sixty for amebic dysentery and seven for typhoid. Venereal diseases occupied second place among all causes of morbidity and contributed the largest number of sick days of any group. They were responsible for 17.24 per cent of admissions for all causes and 14.46 per cent of the total number of sick days. The admission rate for venereal diseases was 90.28 per thousand, a decrease of 11.88 per cent from the 1933 rate. There were 166,891 sick days reported for this group of diseases. During 1934 there were 1,633 persons invalided from the service. A total of 1,043,481 treatment days in all naval hospitals for all classes of patients was recorded, including 807,829 treatment days of navy personnel, 70,738 of Veterans' Administration patients, and 164,914 treatment days of all other supernumeraries. The total does not include 43,735 treatment days on the hospital ship *Relief*, 2,229 treatment days for tuberculous patients at the naval unit U S Army Fitzsimons General Hospital, Denver and 13,350 treatment days for insane patients at St Elizabeth's Hospital, Washington, D C. For the year ended June 30, 1935, there were 832 members in the medical corps, sixty-two of whom were on duty with the Civilian Conservation Corps. There were twenty-six separations from the service during the year, fourteen by retirement, six by resignation and six by death.

Federal Grants for Health Work Approved

The allocation of \$3,333,000 to the various states from funds authorized under the Social Security Act has been approved for extension of public health work, it is reported. Allocations thus far made include \$225,851.58 for New York, \$78,555.48 for New Jersey, \$37,007.98 for Connecticut and \$179,266.32 for Pennsylvania and cover amounts for the remainder of the current fiscal year. They were determined on the basis of population, special health problems and financial needs.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Feb 22, 1936

The Use of Analgesics by Midwives

As more than half the labors in this country are attended by midwives, the problem of a safe and effective method of analgesia has arisen. In a previous letter it was reported that a gynecologist, Mr L C Rivett, had worked out a method of chloroform analgesia by means of 20 minims (1.25 cc) capsules, to be crushed and administered by the midwife or by the patient herself during severe pains. This method has been used in a large number of cases and has been claimed to be quite safe. However, this claim has now been rejected by a committee appointed by the British College of Obstetrics and Gynecology to investigate the question whether there is any safe method of analgesia which can be used by a midwife in the absence of a physician. The investigation was made in hospitals, because there adequate medical supervision and facilities for the necessary observation and recording were available. These were for the most part maternity hospitals or departments attached to medical schools. The records of nearly 10,000 cases of analgesia were studied and classified into three main groups: (1) nitrous oxide and air, (2) chloroform, (3) paraldehyde.

NITROUS OXIDE AND AIR

Nitrous oxide and air were administered by the Minnitt apparatus in 3,238 cases. There were three deaths, which were in no way due to the anesthetic. The conclusion is that the apparatus is safe for midwives in hospitals, provided recent examination by a physician has revealed no contraindication. Its use should be restricted to midwives who are specially trained and who have shown themselves capable. The analgesia is satisfactory in a high proportion of cases. Further experience is necessary before suitability for domiciliary practice is proved.

CHLOROFORM

In 4,975 cases chloroform analgesia was used alone or was supplemented by general anesthesia. There were six deaths. Chloroform is held directly responsible for one of these and to be an important factor in two others, but in no way responsible in the remaining three. The stillbirth rate in the analgesic cases was 2.6 per cent, which is held not to indicate any increased danger to the fetus. The conclusion is reached, "with regret," that chloroform by any method should not be used by midwives acting alone. The immediate and delayed dangers occurred in this investigation. The committee does not consider it possible to guard against such occurrences if the administration is in inexperienced hands.

PARALDEHYDE IN OIL BY RECTUM

Technical difficulties in administration, the need for careful selection of cases and the choice of time for injection, the variable action, and inadequate analgesia at the time of birth, are objections to the use of this method by midwives.

Scholarships for the Victims of Political Persecution

Prof Gilbert Murray states in the *Oxford Mail* that an appeal will shortly be issued for funds to create an institution to act as a successor to the British Academic Assistance Council. One of its functions will be to administer special research fellowships for displaced university teachers. The council was formed three years ago, under the presidency of Lord Rutherford, after the dismissal of 1,000 university teachers in Germany. "Since its advent to power," says Professor Murray, "the Nazi party has dismissed about one sixth of the members of univer-

sity staffs either because they were 'politically unreliable' or were 'non Aryan'. It is instructive that only about one third of the German scholars whom the Council has assisted have been professing Jews, while one third of the 'non-Aryans' have been baptized Christians. Of the displaced German scholars 700 sought refuge abroad. They included specialists in every academic subject, from Nobel prize winners to young lecturers of only a few years' university experience. By public appeals, to which university teachers in particular have responded generously, the Academic Assistance Council and other academic committees have raised funds for the temporary maintenance of German refugees as research guests in universities. During this period the scholars themselves and the academic committees have discovered throughout the world positions of a more permanent character, which now amount to 382. Thus more than half of the exiles have secured permanent appointments. Though so much has been done, Professor Murray says it would be disastrous if complacency led to any slackening of effort. Some 150 refugee scholars are still not yet established. Though negotiations with South American countries may lead to the appointment of nearly 100 scientists in the near future it is becoming increasingly difficult to find openings. He concludes: "For the next five or ten years a deliberate expansion of the universities by the creation of supernumerary posts, is necessary as an effort to preserve that large section of organized learning which in Germany and elsewhere is threatened with destruction by political intolerance."

The Mystery of a Child Born with a Foreign Body in the Heart

The inquest on the body of a baby that died a few hours after birth has attracted attention in the lay as well as the medical press. A small piece of metal was found in the heart, for which no satisfactory explanation seems to be possible. The reports in the lay press of such an extraordinary occurrence might be dismissed as unreliable, though they are quite circumstantial, but the case is authenticated by a letter to the *Lancet* from the two physicians concerned. They write that they are fully aware of the incredible nature of the case but are impelled to place on record what they believe to be a unique occurrence in the annals of pathology. A female child was born to a primipara, who had an uneventful gestation and a normal labor. The child appeared normal in every way but died suddenly some hours after birth for no apparent reason. A necropsy was performed with meticulous care by one of the physicians in the presence of the other who was assisting and observing closely. The mortuary attendant was also a witness. Nothing was found until the heart was removed and laid on the post-mortem slab. It was dissected with a scalpel and a pair of surgical scissors, which were unplated. When the right ventricle was opened a small bright object was seen lying free within the cavity and was extracted under three pairs of curious eyes. "It was a small piece of metal resembling brass or gilded tin appearing to be a circlet of sorts folded upon itself with regular serrations along the edge and measuring roughly 3 by 2 mm. It looked something like the claw setting of a toy jewel ring, such as is found in Christmas crackers."

The physicians emphasize the fact that there was no possibility of the object having been dropped by one of them as they bent over the heart or of its having been shed by one of the instruments used or of its having been picked up from the post-mortem table. They naturally examined these possibilities and excluded them. They suggest that the foreign body was lying within the uterus at the time of conception and that the growing ovum enfolded it, so that it finally came to be where it was found. When the placental circulation ceased and the child's heart "took over," it caused some momentary effect which produced syncope. They admit that this explanation

seems fantastic and they would welcome alternative suggestions. They do not say anything about contraceptive practices by the mother, which their explanation may suggest or about having the object examined by a skilled metallurgist which its importance seems to require. It might be added that any suggestion that the object was in some way accidentally introduced into the heart post mortem is open to the objection of leaving the sudden death unexplained.

PARIS

(From Our Regular Correspondent)

March 6, 1936

Sputum Cultures for the Diagnosis of Tuberculosis

Petroff, said Professor Bezançon and his co-workers before the Académie de médecine initiated sputum cultures, but this method did not become efficient until the studies of Petragnam and Lowenstein. Sputum cultures are simpler, less expensive and better adapted to the mass diagnosis of tuberculosis than is the inoculation of guinea-pigs. Bezançon followed the Petragnam technic. The medium is mixture of milk, peptone, starch and eggs. The sputum is first homogenized and then centrifugated. The cultures are made from the most purulent part of the sputum, and a special feature of Bezançon's technic is to sew between twelve and twenty-five culture tubes. The number of tubes showing colonies is an indication of the abundance of bacilli in the sputum. Bezançon's statistics include 861 cases, in 743 of which no bacilli could be found either by inoculation or by culture. In 118 the cultures were positive. The importance of sputum culture is emphasized by the fact that in a group of 300 people, apparently healthy and hard workers, six were bacillus carriers and in three the presence of bacilli was found only by culture. Two objections arise: first, these bacilli might be nonpathogenic. Research showed, however, that they were pathogenic and that they were authentic Koch bacilli. Second, these bacilli might come from the upper respiratory tract. Evidence of the pulmonary origin of the bacilli was given by the examination of a large group of nurses of the tuberculosis clinic at the Saint Antoine Hospital, none of whom had a positive culture of the sputum or the saliva. However, the presence of bacilli in sputum is to be interpreted only in connection with other conditions, it is not absolute evidence but should lead to a special and complete examination of the patient.

The Prophylaxis of Measles

Saint Etienne, one of the most crowded towns of France, has more than 200,000 inhabitants, the majority of whom are poor workers with lots of children. Slums and the lack of personal hygiene and sanitation flourish in Saint Etienne. Measles is endemic and the mortality is high. Dr. Poulain, health officer of the town in order to fight this plague sought the collaboration of town officials, the newspapers, the military and civil physicians and the school teachers. Poulain's plan was first to keep babies under 2 years of age away from the disease and secondly to protect the older children against complications. To stop the spread of measles, Poulain discontinued the babies' outdoor service and this was given in the homes. Generally speaking he tried to close every place where babies could be congregated. For the older children who could not easily be kept out of schools and other meeting places, Poulain initiated a systematic use of convalescent serum. Fortunately, the 1934 epidemic started in the garrison so he could have a supply of serum. He was strict in the selection of donors excluding every one having any fever or a recurrent attack of the measles. Every donor was tested for syphilis and tuberculosis. Even with such limitations he succeeded in obtaining from seventeen donors about 800 cc of serum. Unfortunately, when this stock was

exhausted he was unsuccessful in persuading nonmilitary citizens to give their blood or that of their children. In the last months of the epidemic he was obliged to advise injection of the whole blood of some convalescent relative. Though this method was uncertain, the mortality in 1935 was greatly reduced.

The Third Congress of Comparative Pathology

The third Congress of Comparative Pathology will take place in Athens, Greece, April 15-18. The president is Professor Bennis of Athens and the general secretary is Dr. Codounis of Athens. In the Section of Human Medicine, five subjects will be discussed: (1) echinococcoses, (2) nephroses and amyloses, (3) leishmaniasis, (4) spirochetoses and (5) avitaminoses. In the Section of Plant Pathology the great subject of immunity in plants will provide an important discussion. Judging by the number of essayists, who come from ten different nations, The Société de pathologie comparée sponsors this congress. The address of the committee of the congress is in Paris, 7 rue Gustave Nadaud.

Death of Professor Fredericq

The death is announced of Professor Fredericq of Liege, who was elected professor emeritus last year. He was 85 years of age and had been professor of physiology in the University of Liege since 1879. He had been a member of the Académie royale de médecine de Bruxelles since 1894. Fredericq combined skill in experimentation with the outlook of a publisher. He was an excellent teacher, whose courses attracted many foreign students. He worked chiefly on the physiology of the heart, the venous circulation and the nervous system. His greatest glory was the *Archives internationales de physiologie* which he founded and which was the most accurate and exhaustive compilation of physiologic material in the world. His son has succeeded him both in his title of professor and as the director of the *Archives*.

BERLIN

(From Our Regular Correspondent)

Feb. 1, 1936

The Importance of Geomedical Knowledge

Professor Schittenhelm, the Munich internist, has developed from data gathered in various parts of Germany an interesting geomедical point of view (*anschauung*). Diseases frequently present differing characteristics even in the locality of first appearance. For example, in Kiel on the Baltic Sea diphtheria is infrequent and mild, whereas from Berlin or Munich extremely severe cases are reported. Scarlet fever is rare at Kiel, and it appears in Geneva, Switzerland, in such a mild form that it is there considered no more dangerous than measles. Infection from *Brucella abortus* is frequently found in Schleswig-Holstein and in Denmark but seldom in Bavaria, although in the latter region the cattle may be infected with *Brucella*. In Kiel, mesenteric tuberculosis is frequent among children, in Basel it is never found. Perhaps differing types of bread and milk ingestion are here of importance. In Geneva tuberculosis takes a more exudative, diffuse and speedier course than in Kiel. More tuberculous meningitis also is encountered.

Remarkable differences exist among diseases of the blood. The disappearance of chlorosis is connected with better hygiene among young girls. On the other hand increase in the number of cases of thrombosis and leukemia was observed more frequently in northern and eastern Germany than in Bavaria, for example. The same is true of pernicious and essential anemias and hypochromemia. The increase in cases of pernicious anemia after the World War is well known. Pneumonia of the upper lobe is relatively infrequent but of a severe type at Kiel. At Munich it is frequent but relatively mild. One is astonished at the large number of patients presenting circulatory disturbances

at Munich, for example, tricuspid insufficiency with positive hepatic pulsation, a condition rarely encountered at Kiel. Primary sclerosis too is found at Munich. Apoplexy, atherosclerosis and thrombosis are more frequent at Basel than at Kiel. Gastric ulcer and biliary disorders likewise present distinct regional differences. Cirrhosis of the liver shows the strangest distribution of all, alcohol cannot alone be guilty of causing this disease, when in Russia, Hungary and other countries the rate is less than 1 per cent. Psoriasis is frequent in the north. It decreases toward the south and is quite rare in the tropics. Constitutional factors also should be considered, for example, as a cause of prolapses among females. In Vienna this condition results from relaxation of the muscles of the pelvic floor, whereas in Berlin insufficiency of connective tissue of the supporting apparatus is held responsible. Interesting too is the frequently observed decrease from east to west in the birth rate of males. On rare occasions gout is still encountered in England. In Basel it never appears. Obesity is more frequently observed among Lapps and Netherlanders. The significant causative factors are, for the Lapps, excessive ingestion of fat and lack of physical exercise, for the Netherlanders, good nutrition. For diabetes no regional differences are observable. The contrast between the nature of thyroid disturbances at high and low altitudes is well known. Goiter is more prevalent in the highlands; the lowlanders are more subject to thyrotoxicosis and to exophthalmic goiter. Numerous other regional differences in thyroid diseases are found. For example, in Switzerland goiter frequently is accompanied by cretinism, but this is not true for the Netherlands. In Switzerland goiter more frequently is found among the poorer classes than among the rich, in the Netherlands there is no such difference. An endemic goiter of the North German lowland is recognized, a similar condition is found in Norway. The Swiss goiter of puberty often goes into exophthalmic goiter. The thyroid body may thus be influenced by numerous factors of nutrition, climate, living conditions and so on. Regional differences in reactions to iodine are observable. There is perhaps a regional difference in the effect of liver preparations as well. Digitalis must be administered with greater caution at Kiel than at Munich. The part played by racial factors in these differences is as yet unknown to science.

A Revival of Medical History

A reaction has set in against analytic medical research and the elaborate diagnostic and therapeutic methods which during the last decade had come to assume such large proportions. The endeavor has been to master the technic of medical practice through complicated diagnostic and therapeutic methods which stressed the study of separate parts. Now the cry has gone up that the patient should be regarded as an entity. Psychic treatment of the patient by the physician comes more to the fore and greater value is attached to hereditary predispositions and constitutional differences while time honored household remedies of proved worth seek a place beside the products of chemical industry. Although medicine will not cease to be related to the natural sciences, it is henceforth to be considered in conjunction with the age old traditional art of healing which had its origin (1) in the impulse to help and (2) (like all the arts) in the impulse to create. The trend developed in Germany soon after the World War, and there is no doubt that political revolution has given it strength and form. This tendency to go back to the old for enlightenment and to consider science as linked with national political concepts has given a great impetus to research in medical history.

Significant in this connection is the appearance of a fictional biography of Theophrastus Paracelsus. In this three volume novel by Kolbenheyer (the third volume of which is significantly entitled 'The Third Reich'), Paracelsus, formerly considered

primarily a quack and a charlatan, is depicted as a reformer on the grand scale, as the founder of a Germanic school of medicine based on experimentation and intuition. This school broke away from the inflexible tradition of galenic science and from the upper schools (predominantly Italian) of humanistic medicine that existed in former times. Now, more than ever, that earlier popular interest in primitive medicine has been revived. Men outside the regular school are coming in for consideration. Thus Gumpert portrays the life of Hahnemann, the founder of homeopathy. Accounts of historic medical struggles (for example, the unappreciated fight waged by Semmelweis against puerperal fever or the official opposition encountered by Schleich, the inventor of local anesthesia) are revived in publications of all kinds.

As the approximate number of readers of the new literature is not known, it is difficult to determine to what extent the layman may be induced to take an interest in his own body, in contemporary scientific progress and in those questions of hygiene which have become objects of governmental and political concern.

The new literature comes to the physician without entailing any expenditure of money on his part. It serves as propaganda for the chemical and pharmaceutical industry. Formerly the physician's interest and affection were secured by all sorts of little gifts. There came to him unbidden and free of charge thermometers, fountain pens, cigaret cases, pocket scissors and like articles, all discreetly stamped with the name of the manufacturer or dealer. When this type of advertising propaganda was banned by official decree, other sorts of gifts had to be substituted, articles which would bear some relation to the medical profession and be at the same time novel and acceptable. With an accurate comprehension of the zeitgeist, the manufacturers pressed into service the history of medical science, conscious of but blinking the fact that the movement toward the past possessed potential hostility toward modern industrial technique. The periodicals in pamphlet form published by the great pharmaceutical houses (such as Bayer, Schering-Kahlbaum, Normark Werke) and which reproduce accounts in extract form of clinical experimentation with their products virtually all came to carry historical material dealing with ethnologic sojourns into the past, medieval military surgery or the mystic healing customs of antiquity.

CHINA

(From Our Regular Correspondent)

Feb 20, 1936

The Biennial Conference of the Chinese Medical Association

The third biennial conference of the Chinese Medical Association, held in Canton, Nov 18, 1935, was particularly noted for its celebration of the one hundredth anniversary of the Canton Hospital, where Dr Peter Parker first introduced and taught Western medicine in China. This occasion also served as a celebration of the fiftieth anniversary of the beginning of Dr Sun Yat-sen's medical and revolutionary work. The first event was further celebrated by the opening and dedication of the new Canton Hospital, which is the direct continuation of the work which Parker began a century ago. The latter event was likewise celebrated by laying the corner stone of the new Sun Yat-sen Medical School. This occasion was honored by the special visit from the United States of the grandson of Dr Peter Parker. More than 400 physicians from all parts of China were present at the conference, including the extreme northwest and 220 scientific papers were presented.

On the special centenary program a paper on "The Future of Medicine in China" was read by Dr F C Yen, director of the National Medical College of Shanghai. He dealt vigorously with the proposal of the government to lower medical education standards in order to secure quickly a large number

of doctors. "If more schools are started and staffed with unqualified teachers, it is bound to flood the profession with a large number of practitioners of quackery and commercialized medicine. In this way the standards of medical practice may not be upheld and it is doubtful whether in the end this will hasten the real progress of scientific medicine in China. The experience of other countries has shown that it is more difficult to fight against quackery and commercialized medicine when poorly trained doctors have once been admitted into the medical profession as recognized practitioners. Our government is determined to carry out a national medical program designed to provide medical care for all.

For this reason the national health administration has issued the following statement as its national policy. State medicine is the only policy to effect medical protection for the mass of the population in an efficient manner and the objective of community protection through state medicine necessitates an organized system of medical and public health services. For a unit of 5,000-10,000 of population there should be a rural health substation to take care of simple medical and health work, and for every five or ten such substations there should be a district health station to render more fundamental health and medical service to the people. In a county there should be a health center, which includes a hospital, a simple laboratory and an administrative organ for the supervision of medical and public health work under its jurisdiction. Similarly, a provincial health center should be built on a larger scale to supervise and assist the different county administrations. Above all these local organizations there should be a national health organization to organize and supervise the medical and health work throughout the country. Under such a system it would eventually be possible to bring health protection to every individual of the population in the most logical and effective manner. To carry out efficiently this national policy all available medical and public health institutions and services should be fully utilized and guided along the lines of the general policy mentioned. It has been felt by those who are interested in social reconstruction work that during the past ten years too many individual efforts for the different classes of social reconstruction have been carried out without regard to coordination. In the medical field one cannot afford such lack of coordination. The declared policy of our government in favor of state medicine will undoubtedly hasten the time of government provision of medical care to the people. Then there will be an inevitable demand on medical schools for the training of personnel competent to practice state medicine, with the result that the medical school must adjust its curriculum and training methods so that they may be equal to the new responsibilities placed on them.

COUNCIL ON CONTRACEPTION

The conference passed the following resolution, proposed by Dr Amos Wong: "That the Chinese medical profession recognize that contraception is a part of the activities of public health, especially in the field of maternity and child welfare." In pursuance of this resolution a special council was appointed to deal with the question of birth control in China. Since the closing of the conference the council has met organized and laid down a program of procedure. In Shanghai a birth control league has been organized and Mrs Margaret Sanger, pioneer in this field, is to visit Shanghai in March.

New National Medical College of Shanghai

The National Medical College of Shanghai is the first government school to undertake seriously the establishment of a school of what is known in the United States as grade A. Under the leadership of Dr F C Yen, a graduate of Yale in 1909, this school was begun in a simple way in 1927. Dr Yen is a direct descendant of China's greatest sage, Con-

fucius He is of the seventy-fifth generation Dr Yen had some valuable experience in the Hunan-Yale school, where he developed qualities of leadership which have enabled him to direct his institution successfully to the establishment at present of what will soon be the greatest medical center in all China To this undertaking the Rockefeller Foundation donated a tract of more than 20 acres of land in the French concession close to the old walled city of Shanghai This valuable land and location have been held for a good many years for this purpose When it came to construction activities the authorities controlling the French concession refused to permit the institution to be built on this site, supposedly because of the proximity of a small medical school under French control This opposition caused a delay of more than a year in securing another suitable location

Construction has now begun on a site that is fully under Chinese control and still convenient to the center of population Nearly 20 acres in a city of four million population is a lot of land to devote to one institution But this undertaking promises to be the greatest medical center in China and it will ultimately have more buildings than are now being constructed and is going to have to assume the health responsibility for a very large population The present construction program consists of 1 A dispensary building designed to take care of 500 patients daily This is a three story building located at the corner of the approach It is thus convenient to the public and directly connected to the hospital behind 2 The hospital building of 500 beds This is five stories high and has many attractive features both in construction and in arrangement It is designed especially for teaching purposes and will accommodate all the services of the school Adequate space is reserved for extending this building to accommodate a thousand beds 3 A nurses' building to accommodate 150 pupil nurses and fifty graduate nurses with adequate facilities for demonstration, class, reading, social and dining rooms 4 The medical school building, designed for the present accommodation of 300 students There will be ten fully equipped laboratories for chemistry, physics, biology, anatomy, physiology, pathology, bacteriology, biochemistry, pharmacology and public health Each of these will have its own offices, lecture halls, rooms for teaching, and research laboratories Administration offices, the library and the museum will be included in this building It consists of two wings of three stories and the central block of four stories 5 A student dormitory for the accommodation of 300 All these buildings are to be of modern construction in the beautiful lines of Chinese architecture The most striking feature will be the roof, with its gentle curves and green glazed tile The walls will be of red brick They will be ready for occupancy by fall

While the National Medical College is a government institution, it has been put under the control of a self-perpetuating board of directors, the chairman of which is Dr H H Kung, minister of finance in the Chinese government at Nanking Dr Kung is a direct descendant of Confucius in the seventy-second generation He is a graduate of Oberlin College in Ohio and has been active in public affairs in China

In addition to this hospital now under construction, the National Medical College has under its control or available for its teaching purposes the following institutions 1 The Chong Chung Memorial Hospital for Tuberculosis, also known as the Kiangwan Tuberculosis Sanatorium It has been reconstructed from a magnificent private garden donated by a wealthy Chinese merchant It accommodates 120 patients This is owned by the college itself 2 The Hungjue Sanatorium 3 The extensive public health work of the municipality of Greater Shanghai This includes both city and suburban or country work, where modern rural work is now being directed 4 The Shanghai Mercy Hospital, a new and model psychopathic institution,

which was recently opened in Shanghai 5 The National Leprosarium, just completed at Dahzang near Shanghai This has been built as a model institution and is hoped to stimulate the improvement of leprosy institutions all over China 6 The Chinese Infectious Disease Hospital

Narcotic Control by the Government

The Chinese government has formed new regulations for the importation of the following ten narcotics opium, morphine hydrochloride, codeine, ethylmorphine hydrochloride, apomorphine hydrochloride, cocaine hydrochloride, strychnine hydrochloride, pantopium hydrochloricum, fluidextract of cannabis indica, and acetone codeine The regulations make it impossible for any of these drugs to be imported except by the government itself, which will in turn distribute them to hospitals and practitioners through one organization, the Central Hygienic Laboratory This move is only one of the firm and vigorous attempts on the part of the government to control opium and other habit forming drugs Government officials are requiring payment in advance and selling only to qualified registered physicians

New Sources of Vitamin A and Their Uses

Dr Peter G Mar read a paper January 22 before the Henry Lester Institute of Medical Research in Shanghai He reviewed the present general knowledge of vitamin A and pointed out that night blindness is a well defined condition described in old Chinese medicine and indicates that it has a nutritional basis Since vitamin A speedily cures this condition he undertook an investigation of old Chinese remedies recommended, with interesting results regarding their vitamin A content and carotenoid values Some of the 146 remedies so studied had low values, while feces of the flying fox, bat and sparrow, which are still much used in China, yielded very high results In this list were twenty-two inorganic remedies, which yielded various results Sixty-five vegetable substances were examined, twenty of which were found to have a higher value, eight an equal value, and thirty-seven a lower value than cod liver oil Atractylis gave values about eighteen times that of cod liver oil Coltsfoot, broom, pink, yam and ink plant all had high values He discussed further the use of these remedies in connection with vesical calculus, leprosy and generally recognized vitamin A deficiency diseases It is possible that in the old Chinese medicine these remedies gained their favor because of their vitamin A and provitamin A potency

Marriages

JAMES I BIAKILI to Mrs Helen Vernon Fawley, both of Fairfield, Ill, in Paducah, Ky, January 19

JOSIE EVANS BRUNSON, Taylors, S C, to Miss Betty Cauble Gibson of Greenville, February 9

WALTER AUSTIN BACON, Pottsville, Pa, to Miss Elizabeth Flock of Williamsport, February 8

OTIS R PLATT North Platte, Neb, to Miss Mary K McHugh of Murdock, recently

CHARLES M MCGILL, Seattle, to Miss Edith Hanson of Forest Grove Ore, recently

WILLIAM M COVONI, Chicago, to Miss Eleanor Lindquist of Webster, Wis, February 20

JACOB N BAILLY to Miss Thelma Elizabeth Drinnon, both of Paducah Ky, February 6

ANTHONY P DESTI, Brooklyn, to Miss Frances Licata of Tampa, Fla, January 4

HAROLD M BLOCK, Dallas, Texas, to Miss Jane Landau of New York, January 3

HERBERT M COITMAN to Miss Grace Perdue, both of Ieger, W Va January 26

Deaths

Malcolm LaSalle Harris * President of the American Medical Association 1928-1929, died at the Milwaukee Sanitarium, Wauwatosa, March 22, after an illness of more than a year. Dr. Harris was born June 27 1862, in Rock Island County Ill. the son of Samuel G. and Frances Green Harris. His early education was received in the public schools of Iowa and his medical education at Rush Medical College from which he received the degree of doctor of medicine in 1882. Since he was only 20 years of age at the time, he was required to wait one year before taking the examination for licensure. He practiced medicine continuously in Chicago after his graduation, teaching also in the Cook County Hospital and serving as professor of surgery in the Chicago Polyclinic. Following reorganization of the American Medical Association in 1901, Dr. Harris became a member of the House of Delegates and was in attendance at all sessions either as a member of the House, of the Board of Trustees or of the Judicial Council from 1901 through 1934. He was a member of the Board of Trustees from 1903 to 1918, most of the time acting as secretary of the Board. He was a member of the Judicial Council from 1918 through 1928 serving also as its chairman. He had been president of the Chicago Medical, Chicago Surgical and Chicago Pathological societies and also of the Western Surgical Association. He was also a member of the International Surgical Association, the American Surgical Association and the American Association for Clinical Surgery. In the Section on Surgery of the American Medical Association he was secretary in 1898 and 1899. His contributions to medical literature included not only the translation and editing of Braun's "Local Anesthesia" but also contributions to the Oxford, Keen's and Bryant's Systems of Surgery. More recently he had written significant essays in the fields of medical economics and statesmanship. He served continuously as secretary of the board of trustees of Henrotin Hospital from 1889 until retired as president emeritus in 1935. The passing of Dr. Harris is mourned by a wide circle of distinguished political, industrial and medical leaders. He was a clear and profound thinker, shrewd in his estimation of men and of their motives and characterized as the possessor of a mind both scientific and legal. Diffident and cautious in his intimacies, his friendship was greatly esteemed and highly appreciated by all who knew him well.



MALCOLM LASALLE HARRIS M.D., 1862-1936

Allard Memminger, Charleston, S. C., Medical College of the State of South Carolina, Charleston, 1880, member of the South Carolina Medical Association, formerly dean and professor of chemistry and hygiene and clinical urinary diagnosis at his alma mater, and professor of general and applied chemistry at the College of Pharmacy of South Carolina, at one time member of the State Board of Pharmacy Examiners of South Carolina and chairman of the city board of health, a contributor to medical and literary magazines, aged 81, died January 16, of influenza and bronchopneumonia.

Harris Ellett Santee * Chicago University of Pennsylvania Department of Medicine Philadelphia 1892, member of the American Association of Anatomists, professor of anatomy, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900-1910, professor of nervous anatomy, Chicago College of Medicine and Surgery 1910-1917, author of 'Anatomy of Brain and Spinal Cord' aged 71, died February 28, in the West Side Hospital of chronic bronchitis and myocarditis.

Hugh Prescott Ross, Nampa Idaho Trinity Medical College Toronto Ont., Canada 1900, member and past president of the Idaho State Medical Association, past president and

secretary of the Canyon County Medical Society, at one time member of the state legislature, member of the state board of medical examiners on the staff of the Mercy Hospital, aged 60, died, January 17, of pneumonia.

William S. Tomlin * Indianapolis, University of Louisville (Ky.) Medical Department 1892, member of the American Academy of Ophthalmology and Oto-Laryngology, fellow of the American College of Surgeons, on the staffs of St. Vincent's Methodist Episcopal St. Francis, and Indianapolis City hospitals, aged 67, died January 27, of cardiovascular renal disease.

Herrman Hirsch Harris * Jacksonville Fla. Tulane University of Louisiana Medical Department, New Orleans, 1910, past president of the Duval County Medical Society, served during the World War, aged 52, on the staffs of the Duval County Hospital, St. Luke's Hospital and St. Vincent's Hospital, where he died January 20, of coronary thrombosis and arteriosclerosis.

Ira Leckrone, Silver Lake Ind., Rush Medical College, Chicago 1896, member of the Indiana State Medical Association, elected president of the Kosciusko County Medical Society at the December meeting, aged 66, died, January 15, in the Woodlawn Hospital, Rochester, of injuries received when the automobile in which he was driving was struck by a train.

Charles Mills Gleason * Manitowoc, Wis., Rush Medical College, Chicago, 1901, past president of the Manitowoc County Medical Society, and counselor of the fifth district of the State Medical Society of Wisconsin, aged 66, on the staff of the Holy Family Hospital, where he died, January 19, of coronary embolism.

John Harris Vance, Omaha, Jefferson Medical College of Philadelphia, 1886, past president of the Omaha-Douglas County Medical Society, at one time member of the school board, formerly on the staff of the Wise Memorial Hospital, aged 77, died, January 16, in the Immanuel Hospital, of pneumonia.

Linwood Melrose Keene, Crownpoint, N. M., Medical School of Maine, Portland, 1904, served during the World War, on the staff of the Eastern Navajo Agency Hospital, aged 61, died, January 14, in the Veterans Administration Facility, Albuquerque, of streptococcal sore throat.

Omer Davis Hutto * Kokomo, Ind., Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906, past president of the Howard County Medical Society, on the staff of the Good Samaritan Hospital, aged 56, died, January 26, of coronary occlusion.

James A. Rosoff * Compton Calif., Northwestern University Medical School, Chicago, 1924, instructor in medicine, University of Southern California Medical School, Los Angeles, since 1934, on the staff of the Los Angeles County Hospital, aged 36, died January 24, in the Hospital of the Good Samaritan, Los Angeles, of uremia.

Francis S. Feeney * New Hampton, Iowa, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1898, formerly county coroner, on the staff of St. Joseph's Hospital, aged 61, died, January 18, of coronary occlusion.

James Alexander Irwin, Philadelphia, Jefferson Medical College of Philadelphia 1891, member of the Medical Society of the State of Pennsylvania, for many years on the staff of the Jefferson Hospital, aged 84, died, January 6, of carcinoma of the prostate.

Alexander Irvine, McDowell W. Va., Medical College of Virginia, Richmond, 1887, formerly superintendent of the Welch (W. Va.) Hospital number 1, now known as the Welch Emergency Hospital, aged 73, died suddenly, January 14, of angina pectoris.

Gustave Adolphus Wedemeyer ☉ Taylor, Texas, Tulane University of Louisiana Medical Department, New Orleans, 1899, past president of the Williamson County Medical Society, aged 61, died, January 24, in Temple, of mastoiditis and diabetes mellitus

Harry Eastman Hitchcock, Woodbridge, Conn., Medical School of Maine, Portland 1898, served in the U S Public Health Service during the World War formerly district health officer for the west coast of Florida, aged 63, died, January 6

George Oscar Hulick ☉ East St Louis Ill American Medical College, St Louis, 1902, formerly professor of obstetrics at his alma mater past president of St Clair County Medical Society, aged 59, died, February 3, of myocarditis

William Nassau Kendrick, Spring Valley, Minn McGill University Faculty of Medicine, Montreal Que, Canada, 1896 member of the Minnesota State Medical Association, aged 63, died, January 21, in Rochester of agranulocytic angina

William James Hawkins, San Francisco, University of California Medical Department, San Francisco, 1890 fellow of the American College of Surgeons, for many years on the staff of the French Hospital aged 66 died, January 7

John G Kinneman ☉ Goodland Ind Medical College of Indiana, Indianapolis, 1898, formerly secretary of the Jasper-Newton Counties Medical Society aged 67 died, January 23 of coronary occlusion and valvular heart disease

Winston Garfield Ramey, Protection Kan University of Louisville (Ky) Medical Department 1907 member of the Kansas Medical Society, served during the World War aged 54, died, January 6, of meningioma of the brain

William Alexander Gowan, Kosciusko, Miss College of Physicians and Surgeons Memphis Tenn 1909 member of the Mississippi State Medical Association aged 56, died January 14 in a hospital at Jackson, of pneumonia

Charles Kline Ferer ☉ Meadville, Pa Medico-Chirurgical College of Philadelphia, 1904 served during the World War on the courtesy staff of the Meadville City Hospital, aged 55, died January 15 of coronary occlusion

William B Richardson ☉ Parkersburg, W Va College of Physicians and Surgeons Baltimore 1914 served during the World War, on the staff of St Josephs Hospital, aged 45, died, January 1, of coronary occlusion

George Hatch Beebe, Pittsfield Mass Albany (N Y) Medical College 1894, aged 68, for many years on the staff of St Luke's Hospital where he died, January 15, of cerebral hemorrhage and bronchopneumonia

Edward Donald Sorteberg, Cannon Falls, Minn University of Minnesota Medical School, Minneapolis 1932, aged 28, died, January 17, in the Fitzsimons General Hospital, Denver, of pulmonary tuberculosis

Knud Hanson ☉ Grand Junction, Colo Denver College of Medicine, 1898, fellow of the American College of Surgeons attending surgeon to St Mary's Hospital, aged 61 died Dec 25, 1935, of bronchopneumonia

James M Nealon ☉ Plymouth Pa College of Physicians and Surgeons, Baltimore 1902, aged 59, on the staff of the Mercy Hospital, Wilkes-Barre, where he died, January 9 of diverticulitis and peritonitis

John William Clark, Oak Hill, Ohio, Ohio Medical University Columbus, 1893, served during the World War formerly county health officer, aged 68 died, January 3, of ventricular fibrillation

Jessie Drew Carpenter, Manitowoc, Wis College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903, aged 72, died, January 20, of aortic regurgitation

Thomas Leo Brennan, New York, University and Bellevue Hospital Medical College New York, 1926, at various times resident in the tuberculosis service at Bellevue Hospital, aged 38, died January 8

Charles Andrew Trumbauer, Denver Keokuk (Iowa) Medical College 1897 member of the Colorado State Medical Society aged 65, died, February 4, in the Presbyterian Hospital of uremia

Charles Wickham Parker, Chicago, Eclectic Medical College of the City of New York, 1882 Rush Medical College, Chicago 1893 aged 81, died, Dec 30, 1935, of carcinoma of the rectum

Henry T Dickens, Wilsonville Ala Georgia College of Eclectic Medicine and Surgery, Atlanta 1889, member of the Medical Association of the State of Alabama aged 71, died, January 8

John Woodbridge Bosworth, Philippi, W Va (licensed in West Virginia in 1881), member of the West Virginia State Medical Association, Civil War veteran, aged 97, died, January 4

Seth Jones Montague, Durham, N C, Bellevue Hospital Medical College, New York, 1872, aged 85 died, January 28, in the Watts Hospital, Durham, of carcinoma of the pancreas

Alburn Matthias Stafford, San Diego, Calif, University of the City of New York Medical Department, 1888, aged 70, died, January 19, of cerebral hemorrhage and angina pectoris

Henry W Drury, Mineral Wells, Texas (registered by Texas State Board of Medical Examiners, under the Act of 1907), aged 67, died, Dec 5, 1935, of cerebral hemorrhage

Hardy David Havard, Theodore, Ala, University of Alabama School of Medicine, 1911, served during the World War, aged 46, died, January 15, of carcinoma of the esophagus

William Arthur Method, Columbus Ohio, Ohio Medical University, Columbus, 1906, member of the Ohio State Medical Association, aged 55, died, January 16, of pneumonia

Charles North Mason, Newport, N C, College of Physicians and Surgeons, Baltimore, 1882, aged 81, died, January 18, of cerebral hemorrhage and diabetes mellitus

Stephen Kerr Patten, Boston, Harvard University Medical School, Boston, 1897, aged 65, died, January 11, in the Peter Bent Brigham Hospital, of cerebral hemorrhage

A Pierce Kemp, Macon, Ga, Southern Medical College, Atlanta, 1889, member of the Medical Association of Georgia, aged 67, died, January 13, of lobar pneumonia

Samuel H Slote, Brooklyn, Baltimore Medical College, 1893, member of the Medical and Chirurgical Faculty of Maryland, aged 75 died, January 16, of pneumonia

William Frederick Woller, Oakland, Calif, College of Physicians and Surgeons of San Francisco, 1914, aged 50, died, January 9, of endocarditis and nephritis

Daniel James Hoyt, New York, University of Vermont College of Medicine Burlington, 1902, aged 63, died, January 8, of coronary thrombosis and arteriosclerosis

Robert Cleveland Williams, Wallace, N C University of Maryland School of Medicine, Baltimore, 1912, aged 49, died January 27, of coronary thrombosis

David Nathaniel Dabbs, Rocky Comfort Mo University of Tennessee Medical Department, Nashville, 1890 aged 74, died January 18 of cerebral hemorrhage

Millard F Powell, Little Rock, Ark, Arkansas Industrial University Medical Department, Little Rock, 1892, aged 75, died, January 10, in Pensacola, Fla

Joseph A Tate, Ennis, Texas, University of Tennessee Medical Department Nashville, 1888, aged 73, died January 14 of pneumonia and heart disease

Jacob Wendell Clark ☉ Chicago, Rush Medical College, Chicago, 1899, served during the World War, aged 57, died, January 30 of coronary thrombosis

Charles Theodore Doremus, San Antonio, Texas, Memphis (Tenn) Hospital Medical College, 1891, aged 74, died, January 14, of chronic myocarditis

Gilbert Milton Bargar, Blaine, Ohio, Starling Medical College, Columbus, 1892, aged 65, died, January 4, of hemiplegia and cardiovascular disease

Franklin Bache Van Nuys, Jackson, Mich Medical College of Indiana, Indianapolis, 1889, aged 70, died, January 18, of cerebral hemorrhage

Augustus C Boyles, Mount Airy, N C Baltimore University School of Medicine, 1897, aged 68, died, January 28, of myocarditis

Claude Owen Reist, Preston, Ont, Canada Queens University Faculty of Medicine, Kingston, 1919, aged 40, died, January 29

John D Leeson, Aylmer (West), Ont, Canada, University of Toronto Faculty of Medicine, 1903, aged 60 died January 29,

John Alexander Lawson, Brampton, Ont Canada University of Toronto Faculty of Medicine, 1894 died, January 17

George W Tucker, Franklin Ind (licensed in Indiana in 1897) aged 91, died, January 26, of arteriosclerosis

Arthur De Voe, Seattle, University of Buffalo School of Medicine, 1875, aged 85 died, Dec 29, 1935

Eli Taylor, Nezperce Idaho, Louisville (Ky) Medical College, 1895 aged 83, died, Dec 15, 1935

Bureau of Investigation

MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum, (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product]

Ammon's Gall Stone Remedy and Ammon's Oil Gall Stone Remedy—Home Remedy Co Pittsburgh Composition Gall Stone Remedy Essentially plant drug extracts including podophyllum alcohol (8.6 per cent by volume) and water small envelope of epsom salt accompanied it Oil Gall Stone Remedy Essentially in oil having the odor of olive oil and plant drug extracts including podophyllum Fraudulent therapeutic claims—[N J 23235 May 1935]

Ammon's Get Well Eat Well Stay Young—Home Remedy Co Pittsburgh Composition Essentially plant drug extracts alcohol (about 9 per cent) and water Cure all Misbranded because alcohol content was wrongly stated and because of fraudulent therapeutic claims—[N J 23235 May 1935]

Chlorine Respirine—Chlorine Respirine Co Chicago and Indianapolis Composition Essentially a calcium compound chlorides and a trace of chlorine in petrolatum For bronchitis laryngitis influenza etc Fraudulent therapeutic claim—[N J 23025 April 1935]

Hills Nose Drops—Wyeth Chemical Co Detroit Composition Essentially ephedrine (0.5 per cent) and essential oils including peppermint and wintergreen (5 per cent) incorporated in mineral oil For catarrh hoarseness rhinitis etc Fraudulent therapeutic claims—[N J 23248 May 1935]

Adgene—Adgene Inc Paterson N J Composition Essentially barley malt sugar cocoa and calcium and phosphorus compounds For underweight run down conditions etc Fraudulent therapeutic claims—[N J 23254 May 1935]

Trunk's Prescription—Trunk Bros Drug Co Denver Composition Essentially potassium iodide extracts of plant drugs including colchicum and a laxative with alcohol and water For rheumatism skin and blood disorders etc Fraudulent therapeutic claims—[N J 23255 May 1935]

Chesto—Muir Laboratories Grand Rapids Mich Composition Chiefly petrolatum and small amounts of volatile oils including eucalyptol menthol oil of pine and camphor For coughs asthma catarrh hay fever boils piles etc Fraudulent therapeutic claims—[N J 23257 May 1935]

Lightning Lax Pills—Muir Laboratories Grand Rapids Mich Composition Essentially plant drugs including a laxative For biliousness pimples debility bad blood etc Fraudulent therapeutic claims—[N J 23257 May 1935]

Vegetate—Heath Foundation of California Los Angeles Composition Essentially calcium carbonate and powdered plant material including rice kelp alfalfa and senna in tablet form For hyperacidity bloating constipation, etc Fraudulent therapeutic claims—[N J 23260 May 1935]

Fullerine—Fuller Hill Corp Chicago Composition Essentially alcohol (27 per cent) boric acid (16 per cent) and small amounts of benzoic acid and volatile oils including thymol and menthol For dan druff sore throat aching feet etc Not antiseptic Fraudulent therapeutic claims—[N J 23261 May 1935]

Lambert's Rheumatic Powders—Lambert Chemical Corp Minneapolis Composition Essentially acetanilid (23 grains per tablet) aspirin and salol Misbranded because of false statement on label that it contained nothing injurious and because of fraudulent therapeutic claims—[N J 23262 May 1935]

Wonderful Dream Salve—Wonderful Dream Salve Co Detroit Composition Essentially creosote in an ointment base For abscesses boils carbuncles sore eyes corns etc Fraudulent therapeutic claims—[N J 23263 May 1935]

W D S Pills—Wonderful Dream Salve Co Detroit Composition Essentially plant material including aloë For blood and liver disorders rheumatism etc Fraudulent therapeutic claims—[N J 23263 May 1935]

Arko Eczema Salve—Arko Herbs Inc Composition Essentially zinc oxide (11.2 per cent) and tar in a petrolatum base Fraudulent therapeutic claims—[N J 23272 May 1935]

Booth's Hyomei—Booth's Hyomei Co Ithaca N Y Composition Volatile oils (32 per cent) including eucalyptol and menthol with creosote alcohol and water For catarrh croup laryngitis etc Not antiseptic Fraudulent therapeutic claims—[N J 23266 May 1935]

Kremola Skin Bleach—Kremola Co Dr C H Berry Co Chicago Composition Essentially ammoniated mercury (6.35 per cent) and zinc stearate (13.5 per cent) in petrolatum perfumed For eczema pimples acne etc Fraudulent therapeutic claims—[N J 23268 May 1935]

Stoll's Diet Aid—Diet Aid Sales Co Chicago Composition Essentially corn starch sugar cacao powder and caramel For obesity (food substitute) Fraudulent therapeutic claims—[N J 23271 May 1935]

Diana Sosborszesz—Diana Mfg Co Masontown and Uniontown Pa Composition (Large bottle) Essentially alcohol (39.7 per cent) acetone ethyl acetate volatile oils including peppermint oil (7.8 per cent) boric acid zinc phenolsulphonate and water (small bottle) essentially alcohol (48.8 per cent) acetone ethyl acetate volatile oils including peppermint oil (1.2 per cent) acetic acid common salt and water For rheumatism lumbago, gout etc Fraudulent therapeutic claims—[N J 23269 May 1935]

Correspondence

GLYCOSURIA FROM TREATMENT WITH ANTERIOR PITUITARY-LIKE HORMONE FOR IMPERFECTLY DEVELOPED TESTIS

To the Editor—In a recent article by Dr Harry Koplin on glycosuria caused by administration of antuitrin-S for bilateral undescended testes (THE JOURNAL, February 1, p 374) it was stated by the author that after injections of antuitrin-S (twenty-four 1 cc injections in eight weeks) for undescended testes in a child, aged 30 months polydipsia, polyuria, enuresis and glycosuria were produced Three weeks after the cessation of treatment with antuitrin-S, these symptoms and the glycosuria disappeared

The occurrence of the aforementioned symptoms stimulated a more careful review and recheck of a number of patients in my series who were treated or are being treated for maldeveloped or maldescended testes with the gonadotropic hormone of the urine of pregnant women (Follutein-Squibb)

In none of the cases previously reported by me in the literature (Maldevelopment and Malescent of the Testes, *Am J Dis Child* 50 649 [Sept], 1429 [Dec] 1935) or in those not reported (sixty patients in all, the majority ranging in age from $3\frac{1}{3}$ to 15 years, the rest being adults or in late adolescence) was there any suspicion of glycosuria, as might have been evidenced by the symptoms of polydipsia, polyuria or enuresis

This suspicion was lacking because of this absence, in all patients, of the subjective complaints in question and because of the definite absence of dextrose in the urine specimens of those several patients who were studied Not all of these cases, therefore, were subjected to intensive urine studies before this time Nevertheless, after Koplin's report I instituted a check up

Antepandrial and postprandial urine specimens of one group of sixteen patients, ranging in age from $5\frac{1}{2}$ years to 14 years with one patient 19 years of age, who are at present showing good genital response to the anterior pituitary-like gonadotropic principle from the urine of pregnant women (with the exception of 2 patients—the 19 year old boy, and a 6 year old boy who has received an insufficient amount of the anterior pituitary-like principle derived from an extract of the placenta), were taken and examined a number of times for each patient These were tested for dextrose by the Benedict qualitative method The urines of these sixteen patients (even in the one in whom a different brand of gonadotropic principle was used) showed an absence of dextrose

In addition to this study of the urine of the patients still under treatment, I examined several specimens of urine from eight boys who had received and completed a course of treatment with this hormone and who had therefore already been

discharged after showing a satisfactory genital response. This group was all under 14 years of age. The lapse of time between the last injection of this hormone and the institution of this urine study ranged from four to twenty months. There was no evidence of glycosuria in any of the patients of this group.

I feel, therefore, that the glycosuria in the patient observed by Koplin might have been a coincidental finding or one peculiar to this patient, for it can be stated with certainty that neither my patients who are at present receiving treatment or the eight patients of the group who had received and completed treatment with gonadotropic substance of the urine of pregnant women for their imperfectly developed testes showed polydipsia, polyuria, enuresis or glycosuria.

It must not be overlooked that the commercial preparation used by Koplin differed from the one that I used. However, I have had the occasion to check on the product antuitrin-S used by Koplin, in three of my patients who have received by now, large quantities of this hormone. I have found no glycosuria present.

GEORGE B. DORFF, M.D., Brooklyn

1176 Eastern Parkway

From the Endocrine Clinics of the Department of Pediatrics, New York University Medical College, the Children's Medical Service of the Third Medical Division, Bellevue Hospital and the Beth El Hospital.

SENSITIZATION OF GUINEA-PIGS WITH METHYL HEPTINE CARBONATE

To the Editor — Prompted by a recent editorial comment (Lip Stick Dermatitis, *THE JOURNAL* February 8 p. 470) we report briefly experiments which have shown that sensitization of animals with methyl heptine carbonate can be effected by methods used in previous work on dinitrochlorobenzene and other substances (Landsteiner, Karl, and Jacobs, John, Studies on the Sensitization of Animals with Simple Chemical Compounds, *J. Exper. Med.* **61**: 643 [May] 1935). The investigation was made on account of observations in human beings on dermatitis due to facial cream or lip stick containing methyl heptine carbonate and "perfume dermatitis" described in papers first brought to our attention by Dr. Simon Flexner (Hoffman, M. J., and Peters, John, Dermatitis, Due to Facial Cream Caused by Methyl Heptine Carbonate, *THE JOURNAL* March 30, 1935, p. 1072; Baer, H. L., Perfume Dermatitis, *ibid.* May 25, 1935, p. 1926).

Ten intracutaneous injections at weekly intervals in white guinea-pigs on the back, of 0.05 cc of olive oil containing 0.5 mg of methyl heptine carbonate were followed by two weeks of rest and the animals tested by gently spreading one drop of a 20 per cent alcoholic solution of the substance on the skin of the flank. While normal animals, as a rule, do not show any reactions, in a considerable number of the sensitized pigs the treated sites became pink, sometimes elevated and the sensitization was specific as demonstrated in cross tests with animals sensitized with 2,4-dinitrobenzyl chloride, *o*-chlorobenzyl chloride, 2,4-dinitrochlorobenzene, urushiol and *p*-nitrobenzyl chloride.

In several animals, sensitization could be produced by applying methyl heptine carbonate to the surface of the skin.

In keeping with the suggestion mentioned in our report, one may suppose that in this case also the capacity of methyl heptine carbonate $\text{CH}_3(\text{CH}_2)_7\text{C}=\text{COCH}_3$ to sensitize is due to its chemical reactivity, particularly the ability to combine with basic groups (Moreu and Lazennec, *Compt. rend. Acad. d. sc.* **143**: 596, 1906) so that it would seem probable that the substance may be converted into antigenic compounds in the animal body.

KARL LANDSTEINER, M.D.
JOHN JACOBS, M.D.

Rockefeller Institute for Medical
Research, New York

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

SPUTUM EXAMINATION IN TUBERCULOSIS

To the Editor — I should like some information about sputum examination in tuberculosis or in suspected cases especially in children. One man's opinion is that sputum examination is no good for early cases since by the time bacilli can be found in the sputum the disease is well advanced and other signs are numerous. Another opinion is that the bacilli are found in early cases in the sputum before any other signs are demonstrable. What is the latest thought on this question? What is the best way to collect a specimen? Is the sputum of an extremity of the day better?

ARTHUR B. DAVENPORT, M.D., Tunkhannock, Pa.

ANSWER — Examination of the sputum should be made in all cases of tuberculosis or even of persons suspected of having the disease. Frequently the patient states that he does not have any sputum. In such cases it is worth while to collect for examination the material that he believes is only cleared from his throat. In the case of infants and children one is usually dealing with the primary form of tuberculosis and there is usually no sputum expectorated. However, when the disease is in the acute pneumonic stage and occasionally even after calcium has been deposited, tubercle bacilli may be recovered from the gastric contents or the feces. Since the infant does not expectorate, a common method of attempting to obtain sputum is by the use of a cotton swab to collect the sputum from the throat while the infant gags. However, this method is not always satisfactory.

The most accurate method of demonstrating tubercle bacilli in the bodies of infants is as follows: After the infant has been without food for six hours, from 200 to 300 cc of sterile water is used to wash the stomach. This water is then centrifuged and the sediment stained for tubercle bacilli. If the microorganisms are not found, some of the sediment is planted on one of the mediums such as that of Corper, Sweany or Petroff, and some is inoculated into the bodies of guinea pigs. By culture and inoculation methods, demonstration of tubercle bacilli is often possible when the microscopic examination of the sediment alone fails to reveal them. Such workers as Poulsen, Jensen and Husted (*Am. J. Dis. Child.* **37**: 900 [May] 1929), Willis (*Tr. Nat. Tuberc. A.* 1933 p. 135) and Gourley (*Am. Rev. Tuberc.* **29**: 461 [April] 1934) have made rather extensive studies on this subject.

Apparently, the tubercle bacilli that are eliminated from primary lesions in infants and children do not constitute a serious public health menace, because they are eliminated by way of the intestinal tract. The occasional infant or child develops the reinfection type of pulmonary tuberculosis, which may appear as tuberculous pneumonia or as a chronic disease. In such cases there usually is considerable coughing, and tubercle bacilli may be recovered from the sputum. These cases are just as significant from the standpoint of spread of tubercle bacilli to others as open cases of tuberculosis in adults.

In the reinfection type of chronic pulmonary tuberculosis the lesion usually is present a long time before there are any symptoms such as coughing and expectoration. Such lesions usually begin in a very small way and may be present over a considerable period of time before they will cast shadows that can be seen with the naked eye even on stereoscopic x-ray film examination. Even after they become sufficiently large to cast shadows that are easily visualized on x-ray films, there usually is no symptom and therefore no sputum to examine over many months and in some cases over several years. Therefore tuberculosis may exist in a progressive form without any demonstrable tubercle bacilli in the sputum. In the days of Koch and Trudeau, the finding of tubercle bacilli in the sputum of a person who was not seriously ill was sometimes the first definite manifestation of tuberculosis, that is, physical signs were absent, as well as significant symptoms. However, since that time our diagnostic aids have improved to such an extent that the disease can usually be diagnosed long before the sputum is positive.

It is true that, in the occasional case, tubercle bacilli may be found in the sputum even in the absence of clinical symptoms, physical signs, or demonstrable shadows on the x-ray film. Probably in such cases the bacilli are liberated from caseous lymph nodes that have ruptured into a bronchus or one of its ramifications and continues to feed tubercle bacilli into the bronchial tree. While such cases apparently are rare, nevertheless they emphasize the importance of making complete examinations of the sputum for tubercle bacilli in every person who has a cough and expectoration.

A satisfactory way to collect a specimen of sputum is to have the patient expectorate into a container in which has been previously placed a few cubic centimeters of a 5 per cent solution of phenol. This suffices to kill any bacilli that may be present and yet does not destroy their staining qualities. Thus, the sputum is rendered harmless to those who subsequently work with it. When tubercle bacilli are not found in direct smears from specimens collected in this manner, one should then collect in a sterile empty container all the sputum for twenty-four hours or longer. In this the bacilli remain alive and the specimen may be treated by the various methods preparatory to guinea-pig inoculation implantation on culture mediums, and so on. When only direct smear examinations are to be made it is usually thought best to collect the first sputum expectorated on awakening in the morning.

If one depends on the staining of direct smears of sputum even when tubercle bacilli are present, they are often entirely overlooked. This is not difficult to understand when one considers the small amount of sputum examined under the microscope. Therefore, a single negative finding is of no value. Corper (The Certified Diagnosis of Tuberculosis, THE JOURNAL, Aug 11, 1928, p 371) has shown that in order to find tubercle bacilli by microscopic examination of stained smears there must be approximately 100,000 tubercle bacilli in a single cubic centimeter of sputum. Special methods of examination have been devised such as the antiformin method, which consists of collecting the sputum for two or three days, then adding to the total amount 15 per cent by volume of antiformin (a preparation consisting of a mixture of sodium hydroxide and sodium hypochlorite and obtainable from commercial houses). This reduces the consistency of the sputum to fluid which should be thinned with alcohol or water and centrifugated. The sediment collected is washed in water, centrifugated again and from this smears are made, which are stained in the usual way. Not infrequently bacilli are demonstrated in this manner when it is impossible to find them by the direct smear method. The dilution flotation method described by Pottenger (*Am Rev Tuberc* 24 583 [Nov] 1931) has been found to be a very accurate, quick method for detecting tubercle bacilli when only a few are present in the sputum.

Guinea pig inoculation has become a standard method in diagnosis. It consists of introducing approximately 0.5 cc of sputum subcutaneously into the inguinal region of the animal. From about fourteen to twenty-one days later the intracutaneous tuberculin test is administered. If the test has become positive in animals that were previously negative to the test, it is good evidence that the sputum introduced contained tubercle bacilli. Confirmatory evidence may be obtained by post-mortem examination of the animal after four or five weeks.

Culture mediums have been extensively used because they are accurate, simple and inexpensive. As sputum frequently contains many other micro organisms, one can destroy them for the most part by treating it with 4 per cent antiformin. After an hour the material is centrifugated, and the sediment is planted on laboratory mediums. Antiformin may be dispensed with if Petroff's medium, which contains gentian violet is used. This inhibits the growth of micro organisms other than tubercle bacilli and, therefore, permits one to plant sputum directly on it.

EFFECTS OF COLD APPLICATIONS ON HEAD INJURIES

To the Editor—Relative to the use of ice irrespective of the method employed in head injuries will you kindly inform me on the following points: 1 To what approximate depth (ice thoroughly applied) does the effect of this therapy penetrate? 2 Are the beneficial results to deeper brain substance obtained by continuous blood flow from periphery to center? 3 Knowing that ice applied as stated violently constricts the superficial capillaries and other blood vessels near the surface is there a possibility of producing further engorgement of the deeper structures and in this manner defeat at least in part the results intended? 4 Is atropine indicated to promote marked and general capillary dilatation thereby relieving deeper engorgements? 5 Cannot the skin take care of a great volume of blood for an indefinite period without damage resulting?

W T ARNOLD MD Hemphill Texas

ANSWER—1 Ice applied to the skin and body does not cause cold to penetrate to any great depth. It is diffused by the blood supply. The literature on the question of penetration of cold is varied.

Levton and Sherrington (*Quart J Exper Physiol* 11 214 1917) demonstrated that an ice bag applied to the skull might change the intradural temperature through a range of 5 to 6 degrees centigrade.

Bernhard Zondek (*Munchen med Wchnschr* 57 810 [July 9] 1920) showed that an ice bag applied one hour over the human thigh lowered the skin temperature from 34.8 to 7 C and the

deep muscle temperature (5 cm deep) from 37.1 to 36.3 C. He also introduced his thermometer into the psoas muscle just posterior to the peritoneum. An ice bag over the hypogastrium for two hours produced a drop of 4.5 degrees centigrade.

Selling Brill (*Ann Surg* 89 857 [June] 1929) reported observations on effects of an ice bag on the abdomen of a dog and showed that it had little effect on the intraperitoneal temperature the greatest fall being 2.5 degrees centigrade, which was observed in one instance.

2 Yes

3 The capillaries may be violently contracted by the application of ice. This, however, is counteracted by the increased blood flow to counteract the effect of the ice. Lewis (*Brit M J* 2 61 [July 10] 1926) showed that on the application of cold the number of skin capillaries remaining open and active usually decreases and that the rate of flow usually slows. If the part is suddenly dipped in ice water the effect in many cases may be the activation of many more capillaries with a markedly increased rate of flow. This is apparently an attempted compensatory reaction.

4 It is questionable whether there would be deeper engorgement. It is doubtful that atropine would have any effect on it.

LATENT SYPHILIS

To the Editor—A patient 62 years of age contracted syphilis innocently six years ago. The diagnosis was not made until January 1935 when the only symptom was a dry hacking cough and the blood test found to be four plus (Kahn). Treatment has consisted of thirty-two intravenous injections of neoarsphenamine 0.6 Gm alternated biweekly with thirty-two intramuscular injections of sodium bismuth thio glycolate 0.2 Gm representing 76 mg of metallic bismuth and potassium iodide 15 grains (1 Gm) orally daily. When half of this continuous treatment had been completed and the serologic reaction was still positive it was thought wise to give the injections in individual courses instead of in alternating doses and so six injections at weekly intervals of neoarsphenamine were given after which an acute fulminating impetiginous eruption occurred on the face involving one eyelid. This necessitated hospitalization for a few days. With rest there was no improvement when all medication was stopped but when a dose of neoarsphenamine was given the impetiginous eruption cleared up promptly. It was therefore considered due to syphilis rather than to overtreatment with heavy metals. Since that time there has been a constant simple form of conjunctivitis and a rhinitis and bronchitis (unproductive). The serologic reaction remains unchanged. The conjunctivitis has now become so alarming and annoying that treatment has been temporarily discontinued. When iodides are given there is a continuous rhinitis even though the dose is small (from 5 to 15 grains). This conjunctivitis necessitates constant wiping of the excessive lacrimal secretions from the eyes the appearance is like that of a hay fever patient and a film of mucus covers the eyes at times impairing vision. The general health of the patient is excellent excepting for some loss of excess weight which is considered favorable rather than unfavorable. The treatment used for the conjunctivitis has been the use of neosalol 10 per cent one drop in each eye three times daily and yellow mercuric oxide ointment placed in each eye at night to prevent the eyelids from sticking together. There are several questions I should like to ask with regard to this case: 1 Should neoarsphenamine and bismuth injections be continued? 2 Because the impetiginous eruption developed six weeks after neoarsphenamine alone had been given without the bismuth compound the remainder of the treatment had been resumed as before alternate doses of bismuth and neoarsphenamine being given. If injections are continued would you consider it better to give these in separate courses? 3 Do conjunctivitis rhinitis and bronchitis follow overtreatment with these antisyphilitic preparations? 4 The sensitivity of the patient to iodides in that the symptoms grow worse with their use might be considered a contraindication for their use might it? 5 What method of treatment would you suggest to clear up the distressing triad of symptoms conjunctivitis rhinitis and bronchitis? 6 Examination of the patient reveals absolutely no focus of infection and the organic function of all of the essential viscera is excellent and yet the skin looks scurvyish, deeply pigmented, dry, scaly, pruritic, atrophic and blotchy. Do you think this skin condition is due to arsenical therapy? If so do you advise the use of sodium thiosulphate? I think that Queries and Minor Notes is the most interesting and instructive section of THE JOURNAL. Most of my colleagues in practice agree with me on this point and I am glad to see this part of THE JOURNAL expanding.

M D Michigan

ANSWER—The treatment for latent syphilis in a man of 62 must be given with greater caution than in a younger person. This patient obviously has an overtreatment syndrome. Such symptoms as excessive lacrimation, profuse rhinitis and bronchitis are due to intolerance to iodides. An acute impetiginous eruption that clears up after a dose of neoarsphenamine is probably also an iodide eruption and not due to syphilis.

It would appear therefore that iodides are contraindicated in this case. The description of the skin as deeply pigmented, dry, scaly, pruritic and atrophic suggests an arsenical pigmentation and should be a warning signal against further neoarsphenamine injections. The treatment that would seem advisable in the patient's present situation would be a preliminary course of sodium thiosulfate injection intravenously in doses

of 1 Gm in 5 cc of sterile distilled water twice weekly for from six to eight doses, then a rest period of three months and a Wassermann test at the end of this period

If the reaction is still positive, bismuth salicylate should be given in doses of 0.2 Gm for ten doses once a week. Further treatment should consist of alternating courses of bismuth salicylate and a mild mercurial preparation such as mercury with chalk by mouth

VITILIGO

To the Editor—A white woman aged 48 apparently in perfect health for the last six or eight months has had large irregular blotches of depigmentation on the dorsum of both hands but nowhere else. The skin in the affected areas appears almost white contrasting against the neighboring portions of the skin which are normally pigmented but appear brown because of the contrast. When exposed to sunlight the white areas develop quickly an erythema apparently from the lacking protection pigment. She states that the areas affected are becoming gradually larger. What is the cause? What is the treatment? If there is no treatment please give a prescription for a colored ointment or salve that may be put on the depigmented areas

W L BENISHEK M D Aurora Ill

ANSWER—Vitiligo is a chronic skin disease characterized by areas of depigmentation, usually symmetrical, often bordered by a zone of hyperpigmentation. It may appear anywhere on the body, but the backs of the hands are a favorite point of onset. It progresses slowly without subjective symptoms. The cause of vitiligo is not known. The chief theories of its etiology are (1) syphilis, (2) toxic conditions, (3) heredity, (4) trophoneurosis, (5) endocrine disturbance

1 Syphilis is not accepted by many as the cause of vitiligo. It is regarded by the best authorities as on a par with the other disturbances of metabolism. Gaucher (Sur l'etologie du vitiligo, *Ann de Dermat et Syph* 3 1113 1902) says "Syphilis produces nutritional disturbances like those caused by any chronic intoxication, frequently causing, among other signs, lessened elimination of urea and lower percentage of urinary chlorides. There is nothing astonishing in seeing vitiligo in the syphilitic, for the syphilitic toxins may be of themselves capable of giving rise to pigmentary alterations in the skin"

2 Besides syphilis vitiligo is often associated with lichen planus, psoriasis, typhoid, scarlatina or pernicious anemia, which may precede or accompany its onset. The theory that vitiligo may at times be a manifestation of chronic arsenic poisoning has yet to be proved, in the light of recent knowledge of the unreliability of tests for arsenic. There have been many reports of vitiligo, with or without melanoma occurring as an aftermath of exfoliative dermatitis caused by arsphenamine or related drugs (Cannon A B and Karelitz, Marie B. Vitiligo from Arsphenamine Dermatitis and from Arsenic of Unknown Origin, *Arch Dermat & Syph* 28 642 [Nov] 1933). In view of the well known ability of arsenic and bismuth to upset the pigmentary mechanism, it is not hard to believe that these drugs may have a causative relation to some cases of vitiligo

3 There have been a few reports of vitiligo occurring in several generations of the same family. The occasional association of vitiligo with retinitis pigmentosa, a disease in which heredity is the chief etiologic factor, strengthens this theory but this does not occur with sufficient frequency to warrant placing vitiligo among the hereditary disorders

4 Vitiligo is often associated with nervous disease, migraine, melancholia, insanity, tabes dorsalis and toxic neuritis. S W Becker (Vitiligo, *Arch Dermat & Syph* 28 497 [Oct] 1933) mentions its relation to lichen simplex chronicus, general neurodermatitis, neurotic excoriations and dermatographism. He emphasizes the neurocirculatory instability in vitiligo patients with low blood pressure and low basal metabolism and quotes Levy, Franke and Juster's observation of the same capillary constriction in the depigmented zone and in the finger tips as that which has been seen in alopecia areata

5 Hyperthyroidism is frequently an accompaniment of vitiligo. Jay F Schamberg (in discussion on Lane, J E. Vitiligo and Syphilis, *THE JOURNAL*, July 5, 1919 p 30) reported having seen the two diseases develop simultaneously

Hypothyroidism is also sometimes associated with vitiligo, and Addison's disease has been noted in association with vitiligo

Scleroderma, in which hyperpigmentation commonly occurs, has been accompanied by vitiligo in many instances, and the same can be said of morphea. Now that hyperparathyroidism has apparently been implicated in the production of scleroderma, the argument for the endocrine etiology of vitiligo has been strengthened (Leriche, R, and Jung, A. Les traductions tissulaires de l'hyperparathyroidisme dans la sclerodermie, *Presse med*, Aug 31, 1935, p 1361)

Alopecia areata and vitiligo are often seen together, but this does not help much in any decision as to etiology

The treatment of vitiligo has been generally held as of no value, but recently encouragement has been offered. Lindsay's method of treatment by intravenous injection of gold sodium thiosulfate, though frequently unsuccessful, has had support from the report of J L Grund (Treatment of Vitiligo with Gold Thiosulfate Given Intravenously and Subcutaneously, *Arch Dermat & Syph* 31 867 [June] 1935), who saw distinct benefit from both intravenous and subcutaneous injections

Ultraviolet radiation used over a long time stimulates pigment formation in most cases. Effects are made to enhance its action by intravenous injection of acriflavine base, beginning with 5 cc of a 0.5 per cent solution in water, repeated every third day, with gradual increase in dosage. Great care must be taken not to get any of the solution outside the vein, for it is very irritating. Albuminuria, nausea, vomiting, headache and fever are possible complications. The patients must be warned not to expose themselves to strong sunlight, and ultraviolet treatments must be given cautiously (Zakon, S J. The Combined Trypaflavine Quartz Light Treatment of Psoriasis Vulgaris, *Illinois M J* 61 444 [May] 1932)

Painting the depigmented areas with an alcoholic solution of oil of bergamot before ultraviolet treatment has seldom been helpful, probably because a sensitization to oil of bergamot is necessary to the production of the dermatitis that brings on the pigmentation

One of the simplest methods of concealing the white spots is to paint them as often as needed with a 0.25 to 0.5 per cent aqueous solution of potassium permanganate. William Allen Pusey (The Principles and Practice of Dermatology, New York, D Appleton & Co, 1924, p 972) suggests

	Gm or Cc
Glycerin	10 to 40
Zinc oxide	
Calamine powder	aa 120
Water	ad 1200

To this sulfonated bitumen is added until the right shade is obtained (usually from two to fifteen drops)

Bleaching the hyperpigmented border helps to make the depigmented patches less conspicuous. A 30 per cent solution of hydrogen peroxide, 1 part, anhydrous wool fat, 6 parts, and petrolatum to make 10 parts may be applied to a small area once a day. If it causes irritation, one should stop its use and wait for the inflammation to subside. If necessary, the hydrogen peroxide content may be increased

MORTALITY STATISTICS OF INJECTION WITH NEOARSPHENAMINE AND INJECTION OF VARICOSE VEINS

To the Editor—Kindly quote me mortality statistics concerning the relative risk between varicose vein injection and neoarsphenamine injection
M S, Wisconsin

ANSWER—The mortality statistics of neoarsphenamine injections as compared with fatalities following the injection treatment of varicose veins are difficult to interpret. The arsphenamine mortality has been analyzed by Stokes (Modern Clinical Syphilology, ed 2, Philadelphia, W B Saunders Company, 1934). He gives the following summary of statistics

Year	Author	Injections
1910 1913	Leredde and Jamin	1 3 777
1911 1914	Nichols	1 5 000
1914 1918	British Base Hospital No 39	1 8 000
1917 1919	Guy (United States Army)	1 12 500
1920	Meirowsky (European statistics)	1 11 289
1920	Meirowsky arsphenamine	1 13 000
1920	Meirowsky neoarsphenamine	1 32 430
1920	Meirowsky death rate under 0.6 Gm	1 162 800
1920	Meirowsky death rate over 0.6 Gm	1 3 000
1916 1924	Section of Dermatology (Mayo Clinic)	1 21 000
1919 1927	United States Navy	1 17 526
1925 1931	University of Pennsylvania	1 33 600

The average risk of death (avoidable and unavoidable) ranges according to these figures between 1 7,000 and 1 11,000

The unavoidable risk of death ranges between 1 56,000 and 1 162,000. Good performance is estimated by Stokes at from 1 15,000 to 1 35,000, depending on material, system and dosage.

It is difficult to differentiate between avoidable and unavoidable deaths. The administration of arsphenamine to a patient with an obvious contraindication may result in death not from the drug but from its improper use. The mortality statistics from varicose vein injections have never been submitted to such a searching scrutiny as those due to arsphenamine. McPheeters reported a death rate of approximately 1 5,000. Kettel estimated the total mortality as 1 3,000. It must be emphasized that these figures represent the number of patients and not the number of injections

The following data have been summarized from Kilbourne's article (THE JOURNAL, April 20, 1929, p 1320)

Author	Cases	Deaths
McPheeters	53 000	11
Sicard and Gaugier	15 000 (120 000 injections)	0
Linsler	15 000 (50 000 injections)	0
Delater	890	0
Douthwaite	2 000	0
Genvrier	4 000	0
Weisen	2 000	0

Kettel (*Zentralbl f Chir* 58 1498 [June 13] 1931) knew of twenty deaths in 60,000 patients who were treated by injections, a total mortality of 1 3,000 per patient. Half of these deaths were readily avoidable, owing to the use of toxic drugs or improper selection of cases. This would leave an unavoidable mortality of 1 6,000 per patient.

Because of the fact that individual experience with the injection treatment is growing, less toxic drugs are used the importance of excluding patients with latent phlebitis is becoming more common knowledge, immobilization after treatment is avoided and vein ligations above veins suspected of harboring infection are more frequently employed, the mortality rate per injection of varicose veins certainly compares favorably with the percentage of good performance as given by Stokes, namely, from 1 15,000 to 1 35,000 per injection, as most patients receive from ten to thirty injections during treatment.

These figures emphasize that caution is necessary in interpretation and that average performance throughout the country is far better today than it was ten years ago. Large individual statistics may still be found without a single mortality. Because of the difference in clinical material age groups and drugs further comparison is not profitable.

HYPOTONIA AND PARALYSIS AFTER SUBARACHNOID INJECTION OF ALCOHOL

To the Editor—A man aged 45 with a negative Wassermann reaction and no detected tuberculous infection has retention of the urine and of the bowel contents as the result of hypotonia following subarachnoid injection of 10 minims (0.6 cc) of 95 per cent alcohol. His family history is negative. He had the usual childhood exanthems. He never had any cord lesions as a child. Five years ago an iron spike was driven deep into the right buttocks and this laid him up for several days. A few weeks later he began having sciatic pain. He has had occasional colds and grip. He has not had pneumonia or venereal diseases. The present trouble started five years ago as sciatica diagnosed by several doctors in private practice and at clinics. He has several teeth that probably carry infection but have not been roentgenographed. The blood pressure is 138 systolic 84 diastolic. The pulse rate is 82. He is nervous. He walks with a limp and a forward stoop favoring the painful right leg which pains excruciatingly from buttock to ankle posteriorly following the course of the sciatic nerve. Otherwise his physical condition is normal. He has been given scores of medicines during the past five years. Lately he had 40 cc of physiologic solution of sodium chloride injected around the sciatic nerve at a point joining the fold of the gluteal muscle but this gave no satisfactory result. Following the advice of several physicians he was given 10 minims (0.6 cc) of 95 per cent ethyl alcohol fifteen days ago through the third lumbar interspace. A medium size spinal puncture needle was used and the duration of the injection was three and a half minutes while he lay on his left side and in a 20 degree Trendelenburg position. He was not permitted to get up for seventy-two hours. During the first twelve hours he lay with the hips slightly elevated. He also lay on his left side for the first six hours with occasional leanings on the back and stomach. The pain disappeared almost at once after the injection. Incontinence of urine and of the bowels persisted for twenty-four hours. Then retention developed and is yet present. The left knee jerk is present but not the right. There is light anesthesia to a pin point over the third and fourth sacral segmental areas of the skin which is complete except for smaller areas on the left side. Anesthesia of the skin passed farther down the posterior surface of the thigh but this is less now. Muscle power is gradually but slowly returning in the right limb although the knee often buckles under him. He can localize deep pressure of the finger on the muscles of the limb yet he cannot direct the movements of the right leg with his eyes shut. When sitting on a chair he says that he has the sensation of having the testicles under pressure as though they were being squeezed. The sole of the right foot is very sensitive and recently it has had a disagreeable burning sensation. The left limb is normal. The patient is very nervous and restless. There is no fever pulse and blood pressure are normal. He feels the discomfort from retention in the bladder and lower part of the bowel but he cannot pass the urine voluntarily. Please comment on prognosis as to bowel and bladder. What can be done to hasten the return to normality? Kindly omit name and address.

M D New York

ANSWER—When strong alcohol comes in contact with sensory nerve fibers it produces anesthesia and relieves pain in the area of the blocked nerve. Similarly it causes paralysis and subsequent atrophy when brought in contact with motor nerves. Consequently unless paralysis of the legs and sphincter disturbance already are present an injection such as the one given in this case should not be made without having the patient

understand that relief from pain is likely to be obtained only at the price of paralysis. It is unfortunate that recent writers have spread the belief that injections of this kind can be given without considerable risk of paralysis. One need only recall the extensive experience with alcohol injection for trigeminal neuralgia which has shown that whenever the alcohol has accidentally reached such motor nerves as the third sixth and motor branch of the fifth nerve paralysis of more or less prolonged duration has invariably occurred. In this case, in which probably only the fibers of the cauda equina were reached and not the spinal cord itself it is likely that there will be recovery from the paralysis and sphincter disturbance within six months.

DIAGNOSIS OF UNUSUAL ERUPTION

To the Editor—Miss A. K. aged 19 white and single complains of having had for the past six years on changes of weather from warm to cold or dry to moist a rash located over the extensors of her fingers of both hands and over her lower extremities from the toes to the lower third of her thighs. The rash appears to be like a blister lying on a red base but on palpation hard to touch. With the appearance of the rash the areas involved itch intensely. With a change back to warm or dry weather the rash spontaneously disappears leaving no discoloration or changes over the involved areas. Physical examination is negative. I have not seen the rash but have described it as learned from her history. What is the possible cause of the condition? What can be done in the way of treatment? What is the prognosis? Kindly omit name.

M D New York

ANSWER—Three possibilities suggest themselves (1) a contact dermatitis, (2) erythema multiforme, (3) dermatitis herpetiformis.

1 A contact dermatitis would be due to sensitization to some material with which the patient comes in contact only occasionally. Does she wear different clothing in cold damp weather? Her daily habits must be examined minutely to reveal every unusual contact. The change of weather may be only a coincidence, not as regular as the patient thinks. Patch tests should be made between attacks to discover the one or several sensitizations. The vesicles of a sensitization dermatitis are very superficial and are easily ruptured. The report of a hard blister-like eruption need not mean actually a vesicular one for patients frequently use that term in describing wheals or papules.

2 Erythema multiforme might have this distribution, though in repeated attacks it ought to involve the backs of the hands or the mucous membrane of the mouth to some extent. Itching is unusual in erythema multiforme.

3 Dermatitis herpetiformis would seldom involve the same areas on successive attacks and would not be likely to clear completely between attacks as this does. It often is vesicular, but the vesicles are not hard.

It is manifestly impossible to venture any diagnosis on so meager a basis. The doctor should see his patient during the next period of cool damp weather and get a first hand idea of the eruption.

VACCINES IN ARTHRITIS

To the Editor—I have a patient who has a form of chronic arthritis in whom under ordinary circumstances I would use the streptococcus vaccine (intravenous) of Clawson and Wetherby. This patient however is quite fleshy and it is practically impossible to see any veins in her arms. I would appreciate your telling me what preparation could be used for this purpose either subcutaneously or intramuscularly. Please omit name.

M D Michigan

ANSWER—There are many streptococcus vaccines or allied substances available for the treatment of chronic infectious (atrophic proliferative rheumatoid) arthritis, such as the vaccine of Cecil (New York), of Rosenow (Rochester, Minn.), of Swift (New York), of Crowe (London) and the antigen of Small (Philadelphia). These can be obtained at little expense from their originators, some are commercially available. Some of them are usually given subcutaneously. Those which are generally prescribed intravenously can be given subcutaneously also, as a rule. However Clawson and Wetherby have argued that subcutaneous administration is likely to increase rather than decrease a patient's hypersensitivity to streptococci and that the intravenous method is more likely to produce desensitization. The basis for their belief is derived from animal experiments and from agglutination tests and tests of cutaneous sensitivity of debatable significance. The statement that the subcutaneous administration of small doses of the vaccines mentioned is often or regularly likely to produce recognizable clinical hypersensitivity and unfavorable effects is not borne out by the facts and observations from much clinical experience.

While each of the originators is inclined to believe (or hope) that the method of selection and preparation of his respective

vaccine has made it more nearly specific than that of others, it is the opinion of disinterested observers of wide experience that regardless of the choice of vaccine or its method of administration results are generally similar. All these vaccines are somewhat alike, all are probably relatively (although not entirely) nonspecific, and all probably produce (in suitable individuals at least) some degree of what is called, for lack of better knowledge, nonspecific desensitization." Current preference for small doses, to avoid constitutional or focal reactions, seems well founded.

TATTOOING OF EYES

To the Editor—A man aged 35 received a blow in the left eye five years ago. He has total loss of vision and cannot even recognize light. There is no pupil. The cornea is a light faded blue. Before the accident the cornea was a deep blue. The eye is conspicuous chiefly because of the light cornea. Is there any way to have this blind eye tattooed in the region of the cornea with a blue pigment so that the blind eye will match the normal eye? If so where is the work being done and who is capable of doing it?

M D Pennsylvania

ANSWER—If the iris alone has faded nothing can be done to improve the appearance. If the cornea is bluish white (the iris not being seen through the scar) a central round tattooed area giving the appearance of a black pupil will improve the appearance. There has been no satisfactory color tattooing of the cornea. Dozent Guist formerly of the second eye clinic in Vienna, experimented with various reagents to produce color with little or no success. Only dark brown (from gold chloride) or black from platinum chloride have been used with success.

TREATMENT OF PYELITIS

To the Editor—The patient I am writing about is 26 years of age, is married and has one child a year old. This is the second attack of pyelitis the patient has had since childbirth. She had two similar attacks about six years ago and one at the age of 3. The urine is full of pus. Pain is present in both flanks. The reaction of the urine is slightly alkaline as a rule. Culture of the urine shows *Bacillus proteus*. Intravenous pyelography shows complete double ureters on both sides with no obstruction. Bacilluria is present even after the urine is cleared microscopically. Treatment has consisted of alternate alkalization and acidification (degree not determined) of urine forcing fluids, halibut liver oil or carotene. The ketogenic diet has not been tried. Could you suggest any line of therapy that might clear up this bacilluria? The patient is at present in bed. Kidney lavage has been done on previous occasions with resulting clearing up of the pyuria but not the bacilluria. Any help would be greatly appreciated. Do you think autogenous vaccination might help?

M H SCHNEIDERMAN M D Philadelphia

ANSWER—Urinary infections with *Proteus vulgaris* are more difficult to cure than *Bacillus coli* infections. The fact that the infection has been repeatedly reduced to a bacilluria makes it possible that ammonium chloride (enteric coated pills), 1 Gm four times a day, and increasing doses of methenamine, starting with 0.3 Gm four times a day and increasing to 0.65 and 1 Gm, may cure the disease. The value of the autogenous vaccine in proteus infections is questionable.

If unsuccessful, the ketogenic diet should be tried. A practical form of ketogenic diet compiled by the Section on Urology and the Rochester Diet Kitchen is helpful in arranging this diet. Further suggestions may be had from the article "The Ketogenic Diet in Treatment of Bacillurias in Females," by C N Cook (published in the *Journal of Urology* 32:153 [Aug] 1934).

ZINC IONIZATION IN HAY FEVER

To the Editor—Kindly inform me as to the status of the zinc ionization method of the treatment of hay fever. Does it give permanent results? Kindly give references. Also is there any advantage in the use of mechanical devices such as Filteraine in the relief of symptoms of hay fever? Please omit name.

M D New York

ANSWER—The zinc ionization method for the treatment of hay fever has been used by many physicians but there is no unanimity of opinion. Many individuals are helped a great deal, others are moderately improved, a third portion state that they see no improvement whatever. Not many report that the results are permanent much beyond the season for which the treatment is being given. Here and there are statements made that the patient is relieved for a number of years. From time to time untoward results are reported. If the treatment affects the olfactory nerve and it does so occasionally, anosmia results. Some people complain of inability to tolerate the presence of smoke after the ionization treatment and on a number of occasions with the cessation of nasal symptoms following ionization asthma has set in promptly. Of course, it is not

possible to state absolutely that the onset of asthma was due to the treatment, but time and the comparison of notes of many men may be important in this regard.

Any adequate device that filters the major portion of dust and pollen from the air is helpful and makes sufferers of hay fever feel more comfortable.

References

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Alden A M A Year's Work with Ionization in the Treatment of Hay Fever *Laryngoscope* 44:741 (Sept) 1934
Hollander A R Ionization as a Prolonged Palliative in Vasomotor Rhinitis *Arch Otolaryng* 21:448 (April) 1935

DANGERS OF SELF TREATMENT WITH IODIDES

To the Editor—Newspaper clippings entitled "For Better Metabolism and The Tired College Girl" by Dr William Brady (66 Agassiz Circle Buffalo) both recommending that every one take a definite ration of iodine at regular intervals have been brought to my attention by patients. Dr Brady offers to send instructions for taking a suitable iodine ration to any one who requests them and encloses a stamped self-addressed envelope. He recommends that adults take one drop of tincture of iodine in a glassful of water each day in each third month. He states that this often works magic in cases of a chronic tired feeling and lack of usual or former ambition, energy or pep with little refreshment from rest or a vacation, a tendency toward accumulation of flabby excess weight, depression of spirits or melancholia, premature aging, graying and falling of the hair, poor circulation or mental torpor. Dr Brady also says that it may prevent high blood pressure or postpone hardening of the arteries. Is there any recognized basis for these statements? There seems to be no substantiation of them in the medical literature. Hartsock (*The Journal* May 1 1926, p 1334) states that the continuous use of iodine over a long period of time should never be prescribed for adults and when its periodic use is prescribed frequent observations of the pulse and weight should be made. Please omit name.

M D, Washington

ANSWER—Hartsock's statement is much more competent than that of Dr Brady. Advice by mail for any kind of condition is properly frowned on, and the "absent treatment" by iodide is a good example of possibly pernicious therapy, when one thinks that "the tired college girl" might be suffering the early stages of tuberculosis or be on the verge of neurasthenia from unhygienic living, neither of which conditions would be helped by Dr Brady's advice and both of which would be harmed by delay in instituting the proper treatment.

CHRONIC GONORRHEA

To the Editor—I am writing to inquire as to further treatment that may be tried in a patient aged 34 who contracted gonorrhea in 1929 and was actively treated by his physician first by irrigations and later by massage, sounds and vaccines. Since then he has received all the methods of treatment both vigorously and with rest periods and yet he complains of a morning discharge which sometimes is quite profuse. Smears are negative for the gonococcus. The prostate strappings are clear. Preputial infection has been ruled out. An endoscopy revealed granulation tissue and nothing else. The prostate feels normal as do also the testicles and the epididymis. All sorts of antiseptics and even diathermy have failed. There is no stricture. Any suggestions would be greatly appreciated. Kindly omit name.

M D Pennsylvania

ANSWER—If there are granulations in the urethra, these are frequently the cause of prolongation of a discharge and should be destroyed. This can be accomplished either by direct application of a fairly strong solution of silver nitrate through the urethroscope or by repeated instillations of a mild solution of silver nitrate. Some patients continue to have a discharge from protracted and too energetic treatment. When the granulations have disappeared it might be well to give the patient a long rest omitting all forms of treatment.

INHALATION ANESTHESIA IN WHOOPING COUGH

To the Editor—In the January 11 issue of *THE JOURNAL* under Queries and Minor Notes inhalation anesthesia in whooping cough is discussed. In connection with this query the following report is of interest.

Quite a few years ago I saw a patient about 10 years of age having a fulminating attack of appendicitis. He was in about the third week of a very severe attack of whooping cough with spasms of coughing every few hours. His attending physician stated that it was one of the most severe cases he had ever seen. Operation was imperative and ether was administered. The anesthesia proceeded smoothly and a gangrenous appendix was removed. The patient had no respiratory difficulties during the operation. About six hours after the operation he had a very mild coughing spell but never had any further attacks. Apparently his whooping cough was cured and he made an uneventful recovery.

With this very favorable experience in mind I tried to extend the etherization to other whooping cough patients but had no opportunity to do so.

D C PATTERSON M D Bridgeport Conn

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Louisiana December Report

Dr Roy B Harrison, secretary, Louisiana State Board of Medical Examiners, reports the written examination held at New Orleans, Dec 5-7, 1935. The examination covered 12 subjects and included 100 questions. An average of 75 per cent was required to pass. Thirty-one candidates were examined, all of whom passed. Three physicians were licensed by reciprocity. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Howard University College of Medicine	(1935)		82 3
Emory University School of Medicine	(1934)		86 9
Northwestern University Medical School	(1935)		86 5
University of Kansas School of Medicine	(1935)		83 2
Louisiana State University Medical Center	(1935)		83 8*
85 85 1* 85 6* 83 9* 86 7* 88 9*			
Tulane University of Louisiana School of Medicine	(1931)		84 8
(1937) 8 9† (1935) 82 84 1 84 5 85 3			
University of Nebraska College of Med	(1930) 84 5	(1935)	84 7
Meharry Medical College	(1934)		82 2
84 5† 84 7 (1935) 84			
University of Tennessee College of Medicine	(1933)		80 6
(1935) 80 80 4 84 1 84 7			
Baylor University College of Medicine	(1935)		81 8
Fort Worth School of Medicine Texas	(1911)		82 8
University of Wisconsin Medical School	(1935)		82 5

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
College of Medical Evangelists	(1934)		California
University of Michigan Medical School	(1931)		Michigan
University of Pennsylvania School of Medicine	(1929)		Illinois

This applicant has received an M B degree and will receive an M D degree and Louisiana license on completion of internship.
† Granted temporary permit. Permanent certificate will be issued on completion of United States citizenship.

Missouri October Examination

Dr E T McGaugh, state health commissioner, reports the written examination held in Kansas City, Oct 24-26, 1935. The examination covered 14 subjects. An average of 75 per cent was required to pass. Twenty candidates were examined, 19 of whom passed and 1 failed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of Colorado School of Medicine	(1935)		86 5
Howard University College of Medicine	(1934)		83 6
Northwestern University Medical School	(1935)		87 7
Rush Medical College	(1935)		83 4
School of Medicine of the Div of the Biological Sciences	(1935)		89 5
University of Illinois College of Medicine	(1935)	81	86 3
State University of Iowa College of Medicine	(1934)		83
University of Michigan Medical School	(1934)		90 3
University of Minnesota Medical School	(1935)		83
St Louis University School of Medicine	(1932) 77 7	(1934)	90 4
Washington University School of Medicine	(1935) 85 5 86 8	(1932)	82
Creighton University School of Medicine	(1935)		81 7
University of Nebraska College of Medicine	(1934)		81 9
Woman's Medical College of Pennsylvania	(1934)		84 1
Meharry Medical College	(1934)		80 6

School	FAILED	Year Grad
Julius Maximilians Universitat Medizinische Fakultat Wurzburg	(1920)*	

Twelve physicians were licensed by reciprocity and 1 physician was licensed by endorsement on October 23. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
University of Illinois Col of Med	(1927) (1929)	(1935)	Illinois
State University of Iowa College of Medicine	(1905)	(1934)	Iowa
University of Kansas School of Medicine	(1934)		Kansas
American Medical College Missouri	(1912)†		Illinois
Creighton University School of Medicine	(1932)		Kansas
University of Nebraska College of Medicine	(1934)		Nebraska
University of Tennessee College of Medicine	(1930) Tennessee	(1910)	Mississippi
Marquette University School of Medicine	(1932)†		Illinois

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
University of Pennsylvania School of Medicine	(1934) N B M Ex		

* Verification of graduation in process
† License has not been issued

Tennessee December Examination

Dr H W Qualls, secretary, Tennessee State Board of Medical Examiners reports the written examination held in Memphis, Dec 18 19 1935. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Twenty-five candidates were examined, all of whom passed. The following schools were represented:

School	PASSED	Year Grad	Per Cent
Meharry Medical College	(1934)		84 8
University of Tennessee College of Medicine	(1935)		77 1
80 1 80 3 80 4 81 1 81 1 81 4 81 4 81 5 81 6			
81 9 83 1 83 3 83 5 84 1 85 3 85 5 85 6 85 9			
86 3 86 9 87 87 8			
Licentiate of the Royal College of Physicians of Edinburgh	(1933)		82 6

Two physicians were licensed by endorsement during December. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Yale University School of Medicine	(1933) N B M Ex		
Emory University School of Medicine	(1933)		Georgia

Wyoming October Report

Dr G M Anderson secretary, Wyoming State Board of Medical Examiners, reports the written examination held in Cheyenne, Oct 7 1935. The examination covered 13 subjects and included 100 questions. An average of 75 per cent was required to pass. One candidate was examined and passed. Six physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad	Per Cent
University of Nebraska College of Medicine	(1934)		83

School	LICENSED BY RECIPROCITY	Year Grad	Reciprocity with
Northwestern University Medical School	(1933) Iowa	(1935)	Utah
Rush Medical College	(1935)		Utah
University of Illinois College of Medicine	(1933)		Illinois
University of Nebraska College of Medicine	(1928)	(1931)	Nebraska

School	LICENSED BY ENDORSEMENT	Year Grad	Endorsement of
Northwestern University Medical School	(1933) N B M Ex		

Book Notices

Length of Life. A Study of the Life Table. By Louis I. Dublin, Ph.D. Third Vice President and Statistician Metropolitan Life Insurance Company and Alfred J. Lotka, D.Sc. Assistant Statistician Metropolitan Life Insurance Company. Cloth. Price \$5. Pp. 400 with 53 illustrations. New York: Ronald Press Company, 1936.

This is a reference book for the public health official, the health educator, or the physician who has frequent occasion to refer to facts relating to longevity. It is an interpretation of the life table for the nontechnical reader with certain information on the construction of life tables for the statistician who deals in a relatively simple way with the facts concerning length of life. The authors have achieved the difficult aim of showing with the aid of numerous tables and graphs that "human life is a very personal affair." They have discussed in an interesting way the life span, mean length of life, life tables antique and modern, gain in life expectancy at various ages but especially at birth, and the geographic, biologic and hereditary aspects of longevity. Recognizing the unpractical nature of the advice to make a wise choice of grandparents they seem unable nevertheless to find in their statistics any better assurance of a long life. The contributions of medical and sanitary science to longevity and, of course primarily to increasing the mean length of life rather than the ultimate span thereof are interestingly though briefly outlined. The authors agree with other observers that ancient man, as far as the meager records available make estimations possible seems to have had as long a span of life as modern man, and perhaps longer once he got past the extraordinarily severe hazards of birth and infancy that prevailed in ancient and medieval days. Relationship of longevity to occupational hazards, to physical defects to population problems and to economic problems form the subjects of later chapters. Perhaps few readers will wish to read this book at a sitting, yet it deserves something more than a mere place among the statistical tables, of which it presents many and excellent, and the graphs with which it abounds for the authors have succeeded in making the subject entertaining even though statistical. There is a good index.

Pollen Grains. Their Structure, Identification and Significance in Science and Medicine. By R. P. Wodehouse, Ph.D. Scientific Director of the Hayfever Laboratory, the Arlington Chemical Company, Yonkers, New York. Cloth. Price \$6. Pp. 574 with 123 illustrations. New York & London: McGraw Hill Book Company, Inc. 1935.

This is an exhaustive study of the history and basic principles of pollen morphology, with a key and descriptive classification of the pollen grains of 450 species of the wind pollinated plants of North America. Accompanying the text, but not in a convenient position for comparison with the descriptions, are beautiful enlarged drawings of the pollen grains of about a third of the species discussed. Considerable space is devoted to the genesis and phylogenetic significance of pollen grain characters. Even the eternal question of heredity versus environment is not overlooked, as evidenced by "Inasmuch as the numerical type of symmetry of the pattern is determined by the position and number of the germinal apertures, it may be stated that the number and arrangement of the elements in the symmetry patterns of pollen grains are haplotypic characters that is to say, are the result of their cellular interrelations and directly due to the conflict of the law of bipartition with rectangular intersection, in opposition to the tendency to assume the least-surface configuration." In the orderly development of the author's conclusions he allows himself only occasional diversions. At the end of the historical review, which strangely enough does not include any of the contributions to the subject during the past forty years, the author allows four pages to a description of his methods used in mounting and staining pollen grains and four pages to directions for collecting pollen in large amounts. The short chapter contributed by Dr. Erdtman on fossil pollen statistics and the eighteen pages devoted to an elementary discussion of the role of pollens in the causation and diagnosis of hay fever, which are obviously intended to justify the subtitle of the book, could well be left out without detracting from its usefulness. The practical application of pollen grain identification is suggested in a chapter discussing the author's study of the pollen content of the air in his own home city. The book will be of only academic interest to physicians not specializing in allergy. It will be of great value to those allergists who

have the time and facilities for pursuing the critical study of pollen morphology. While the author strongly favors the examination of pollen grains in their moistened and expanded condition and has so drawn most of his illustrations, he usually mentions their characteristics as seen in their dry form. The book will thus be found useful to those who are familiar with the widely used method of atmospheric pollen study with slides coated with petrolatum or other oils that do not expand the pollen grains caught on them.

Recent Advances in Laryngology and Otology. By R. Scott Stevenson, M.D., Ch.B., F.R.C.S. Surgeon, Metropolitan Ear, Nose and Throat Hospital, London. Cloth. Price \$5. Pp. 346 with 128 illustrations. Philadelphia: P. Blakiston's Son & Co. Inc. 1935.

The literature in the field of otolaryngology, rhinology and laryngology as in the other specialties has grown both in this country and abroad to large proportions. To be fully cognizant of it would require the reading of a considerable number of foreign and domestic journals limited solely to the special field, not to speak of those pertaining to related subjects. It would, of course, be easy to dismiss the whole affair by saying that much of what appears in print is relatively unimportant and repetitious. This attitude would express, however, less than half the truth. In otology, rhinology and laryngology there is a new and enthusiastic attitude in the past few years indicative of a real advance in the knowledge of the difficult problems facing the specialty. For example, much is being said and written of carcinoma of the upper air and food passages, and rightly so. The malignant growths in this area have been recognized as being often of a highly radiosensitive nature, and their reaction to radium and roentgen therapy is frequently most encouraging. The work of Hilding and others on the nature of ciliary action has revived the interest of all in the physiology of the nose and accessory sinuses. Weaver and Bray at Princeton some years ago exposed the auditory nerve in cats, placed suitable electrodes on it, and by means of proper amplifying apparatus were able in a distant sound proof room to reproduce sounds spoken into the anesthetized animal's ear. These studies immediately stimulated an intense investigation here and abroad in a renewed effort to clarify the fundamental nature of hearing. In order to keep abreast with all the new and important advances, those interested turn to yearly reviews, which are helpful though they can give only the transient point of view. The author has covered the ground over a period of years, giving him the opportunity of more mature judgments. His selection of topics of importance is excellent. Continental, British and American opinion is consulted. Considering the large field he had to cover, he has done extremely well, ranging as he does from agranulocytosis to cancer of the larynx, bronchoscopy and esophagoscopy, cardiospasm, chronic nasal sinusitis, hearing tests, the mechanism of the labyrinth and numerous other conditions. If there is one topic left out, it is suppurative infection of the petrous portion of the temporal bone, which will undoubtedly appear in the next edition, which this wholly satisfactory review deserves.

Chronic Streptococcal Toxaemia and Rheumatism. By J. D. Hindley, Smith, M.A., M.R.C.S., L.R.C.P. Cloth. Price 7s. 6d. Pp. 215. London: H. K. Lewis & Company, Ltd. 1935.

The purpose of the book is not definitely stated in the author's preface or foreword, and a reading of it does not make clear just why it was written. The first chapter discusses in broad vague and general terms the subject chronic toxæmia of various sorts, including acid toxæmia. The second chapter deals in the same general fashion with chronic infectious toxæmia. Some cursory remarks on streptococci make up chapter 3. The author believes that, of the infectious toxæmias, the toxæmia attributable to streptococci is most widespread and most important yet least well defined. Chronic streptococcal toxæmia may lead to a life of chronic disability and invalidism from youth to old age. Its manifold symptoms appear during the three stages of the disease and are listed in chapters 4, 5 and 6. The symptoms which "the streptococcal child" (sic) and the older victims of streptococcal toxæmia are likely to present are, according to the writer, indeed numerous and arise from disturbances of any or all functions and tissues of the body. From the title of the book and from a remark here and there one is led to believe that "chronic rheumatism" and "arthritis" are frequent manifestations of this toxæmia. Incidentally, nowhere is any attempt made to

define the terms "chronic rheumatism" or "arthritis" further, indeed, little is said about them. In the last chapter entitled "Summary and Conclusion," one gets a little better idea of what the writer is driving at. The author says that he has taken cultures of the nasopharynxes of an unstated number of normal persons and of persons who gave evidence of having chronic toxemia. The normal nasopharynx contains a mixed flora only 5 to 10 per cent of the organisms of which are streptococci. Among patients affected by chronic toxemia nasopharyngeal cultures may reveal organisms from 40 to 100 per cent of which are streptococci, often of the hemolytic variety. Such a "positive streptococcal index" presents evidence that the patient's immunity mechanism is somehow at fault and that that patient is a victim of, or a candidate for, chronic streptococcal toxemia. The author's treatment includes chiefly "immunization by the use of small doses of streptococcus vaccine, preparation of which is not described, elimination of bacterial toxins by nasopharyngeal washings and attention to diet, to the bowels, to foci to 'endocrine deficiency' and so on. No statistics on results are given. The book represents a hodgepodge of generalities and theories, of well known facts and unprovable hypotheses. Much of it is borrowed material and what is presumably original is not backed up by data, figures or proof of any sort.

Medical Social Work. A Study of Current Aims and Methods in Medical Social Case Work. By Harriett M. Bartlett. Paper. Price \$1. Pp. 923. Chicago. American Association of Medical Social Workers. 1934.

This study of current aims and methods in medical and social case work is a report of the Committee on Functions of the American Association of Medical Social Workers in which there is a discussion of medical social work in relation to social case work and clinical medicine, and the role of the medical social worker in study and treatment.

Through the report there appears to be a friendly and understanding attitude toward the medical profession. Such statements as "since coordination is essential it is important to emphasize the point that the physician always remains the leader of the team" seems to indicate an attitude of helpful assistance rather than of independent domination.

It is recognized that the problems with which the medical social workers are concerned grow out of illnesses and are only partially related to economic needs. The medical social worker endeavors to individualize in the study of these social difficulties. If all the recommendations and illustrations in the report represent the actual practice in this field, qualifications for competent medical social workers should be high.

It appears that medical social workers are endeavoring to establish themselves as a new profession and the author complains in one section of the report that the report of the Committee on the Costs of Medical Care, although permeated with a social point of view, barely makes mention of medical social service. This the author feels "suggests that the medical social worker has not yet adequately interpreted to either the medical profession or the public her possible contribution to the development of social medicine. The approach to medical social problems involves a recognition and interpretation of the emotions, mental attitudes, environmental disturbances, psychologic concepts, functional and mental disturbances, and other social factors surrounding and affecting the patient. In an attempt to develop methods of study and work, medical social workers have found it necessary in many instances to construct their own terminology. There seems to be a desire to attempt to apply orderly methods of thinking to accumulated experience. Thus by experimentation, test and evaluation of results the medical social worker aims to contribute to the attainment of a professional status.

The efforts of the medical social worker 'are directed toward enlarging the understanding of the medical social factors and assisting patient and physician to integrate them into a broader and more effective plan in which she herself undertakes by joint agreement, treatment of the social difficulties.' The medical social worker conceives her function to be that of recognizing primarily the inner needs of the sick person. She is concerned however, not only with persons but with ideas and in defining her role in any case must face the problem of objectives, prognosis and the evaluation of results all of which depend on sound methods of thinking.

If medical social work can be closely coordinated with the practice of medicine, serving both patients and physicians as an auxiliary or supplementary assistance it will find many fields of usefulness. It is well to bear in mind, however, that medicine should serve as the primary agent in the application of appropriate remedies for the sick, and that medical social work should be utilized when desirable as a helpful supplement.

Die Zahnheilkunde im achtzehnten Jahrhundert. Ein Stück Kulturgeschichte. Von Hedvig Lidforss Strömberg. Paper. Pp. 232 with 53 illustrations. Copenhagen. Levin & Munksgaard. 1935.

Good textbooks dealing with the history of dentistry are scarce and this book is a welcome addition. As the author states the eighteenth century is a critical period in the evolution of dentistry, one of rapid development following a long period of stagnation. Indeed, the crest of achievement of this century was not surpassed until the last half of the nineteenth century produced the dental engine, anesthesia and antiseptic methods of treatment. The French contributed the most to this progress through the influence of Fauchard both as a practitioner and as an author, his *Le chirurgien dentiste* has been called the most famous dental book. To no little degree two other Frenchmen, Bourdet and Jourdain, added to the luster of France. The Surgeon Dentist was published first in 1728 with new editions in 1746 and 1786 and was translated into German in 1733. In addition to Fauchard the author refers most often to the books of Berdmore and Pfaff, these three dentists were employed respectively by the royal families of France, England and Prussia. On the whole the selection and arrangement of the material in this book is to be commended. As the result of a defect in the plan there is some overlapping of chapter contents it is a matter of regret that nothing new is presented with reference to the porcelain controversy. There is an excellent bibliography and a short biography of each dentist or scientist mentioned in the text, both of which are placed at the end of the book, there is an index of the illustrations but none of the subject matter. The German of the text is relatively easy reading and the book, therefore, is commended to both those interested in dental history and those searching for suitable reading to attain facility in German.

A Text Book of Surgery for Dental Students. By C. Perchal Mills M.B. B.S. F.R.C.S. Honorary Surgeon General Hospital Birmingham and Humphrey Humphreys O.B.E. M.C. T.D. Lecturer on Dental Anatomy Birmingham University. Fourth edition. Cloth. Price \$5.14s. Pp. 342 with 63 illustrations. Baltimore. William Wood & Company. London. Edward Arnold & Co. 1935.

The purpose of the book is frankly stated in the preface. 'In preparing the fourth edition of this book the authors have carefully preserved its original character as a work designed solely for students and practitioners of dental surgery. Surgical progress and the helpful criticisms of examiners and colleagues have led to the inclusion of many new sections and to much revision of old ones but owing to changes in the syllabus of the Royal College of Surgeons, certain omissions have been possible and the book is not increased in size. It will be found to cover the requirements of the Royal College, and of those universities which publish a detailed syllabus.' The book is a brief summary of the most essential facts that will enable an applicant to pass a licensing examination with the least possible effort. Why it should be called surgery is doubtful as it is a mixture of bacteriology, pathology, surgery and various other subjects in about twenty chapters. Most of the material is clearly expressed in compact form, and it is admirably adapted to its avowed purpose. The chapter on fractures of the jaw is distinctly archaic and contains little or nothing with regard to modern methods of treatment.

In the October issue of the *Journal of the American Dental Association* an editorial entitled 'For Dental Students' stated that 'The texts so named are one or another of the basic sciences for dental students. For the most part they are sketchy things, lacking in continuity, without breadth of foundation, books that give results with half explained or unexplained causes that stock the memory with a chaos of data partially or wholly unassociated and therefore unusable. They hark back to the days when courses in the sciences were skeletons of courses prepared for men who obviously would spend their days at the mechanics of dentistry without a disturbing

thought of bacteriology or pathology." At the present time the demands of dental practice require that the training in the fundamental medical sciences, while not necessarily identical in content, must be the same in quality for medical and for dental students. Unless this is true, there is no justification for the increased length of dental education. It is doubtful whether the present volume will be of much assistance to the dental student of today.

Über die Rhythmik der Leberfunktion des Stoffwechsels und des Schlafes Von Erik Forsgren. Paper. Price 6 50 kroner. Pp 56 with 14 illustrations. Stockholm Isaac Marcus Boktryckeri Aktiebolag 1935

This small monograph summarizes the highly creditable research work of the author and his collaborators on the rhythmic nature of liver function. They have found that during the twenty-four hours of each day the liver passes through two opposing phases or cycles of function. Each cycle begins where the other leaves off, rises to a climax and gradually subsides, to merge into the initial stage of the other cycle. These cycles may be called the assimilatory and the secretory phases respectively, and they vary as regards the time of occurrence in different species and even in different individuals of the same species. In man the assimilatory phase usually occupies the hours between 8 p m and 8 a m, while the secretory phase occurs between 8 a m and 8 p m. During the former phase the liver stores glycogen, water and protein and becomes correspondingly larger and heavier. Its bile content is at a minimum. During the secretory phase the glycogen and protein content of the liver falls, it gives up its water stores and the lobules show an increased bile content. These two phases are reflected in the hourly variations of water, nitrogen and urobilin excretion and also in fluctuations of body temperature. Apparently, the rhythm of liver function is to some extent an inherent property of the organ. It is not, for example, greatly dependent on food intake. The author discusses the application of these observations to certain aspects of carbohydrate metabolism and diabetes mellitus. It is obvious that the phenomena of storage or excretion of metabolites, the majority of which directly or indirectly involve the liver, should be interpreted with the foregoing considerations in mind. This work should therefore be of interest to students of metabolism, both research and clinical.

A Practical Handbook of Midwifery and Gynecology for Students and Practitioners By W F T Haultain, OBE, MC, BA, Gynecologist, Royal Infirmary, Edinburgh and Clifford Kennedy, MB, ChB, FRCS, Assistant Gynecologist, Royal Infirmary, Edinburgh. Second edition. Cloth. Price \$5.25. Pp 356 with 44 illustrations. Baltimore: William Wood & Company, 1935.

The authors attempt to cover the entire fields of obstetrics and gynecology in outline form. The task is accomplished at the expense of omitting many important details. The chapter on antepartum care is lamentably insufficient but it most likely indicates the authors' lack of appreciation of adequate antepartum care. Whereas the authors recommend that the urine be tested for albumin once a month until the twenty-eighth week and more often after that time, they suggest that blood pressure determinations be made only at each examination except when albumin is found. However, since only three examinations are recommended during the entire gestation (at the first visit and five weeks and two weeks respectively before confinement) only three blood pressure readings are to be made during pregnancy in cases in which albumin is found. Furthermore, no mention is made of weighing patients and taking Wassermann tests or blood counts. It is unfortunate that under the heading of eruptive fevers the authors inadvertently included cardiac disease, diabetes and chronic nephritis. When a cesarean section is necessary in a cardiac case, the authors suggest spinal and chloroform anesthesia, both of which are dangerous for pregnant women. In the prophylactic treatment of preeclamptic toxemia the recommendation is made to examine systematically the urine of all pregnant women during pregnancy but again there is no mention of blood pressure readings. The authors advocate repair of perineal lacerations before expulsion of the placenta. The senior author gets his patients out of bed on the third day after delivery. For uterine inertia during labor, solution of posterior pituitary, a combination of thymus extract and hypophysis extract and estrogenic substance are suggested. In cases of postpartum hemorrhage after expulsion of the pla-

centa the authors first use a hot vaginal douche and if this is unavailing they employ a hot intra-uterine douche. Such douches are usually inefficient and time consuming and permit unnecessary loss of blood. The authors believe that dysmenorrhea caused by acute antelexion of the uterus can be cured by pregnancy. In the section on ovarian tumors, granulosa cell tumors are mentioned but not arrhenoblastoma, Brenner tumor or disgerminoma. Furthermore, granulosa cell tumors are classified under benign tumors, though a distinct proportion of them are malignant. In the discussion of vaginal discharges no mention is made of monilia infections. The treatment of tuberculosis of the female genitalia is summed up in one sentence: "Spontaneous cure may result by usual tubercular treatment combined with usual local treatments for pyosalpinx." The term "tubercular" endometritis is used instead of "tuberculous" endometritis. In a small book for students and practitioners it is surprising to find a description of the Wertheim operation for carcinoma of the cervix, which is an operation to be performed only by an experienced gynecologist. Throughout the book there are numerous references to proprietary remedies. The book is clearly printed and well written but it is hoped that in future editions, even if no other alterations are made, the chapter on antepartum care will be enlarged, because this subject is of the greatest importance in obstetrics.

Diseases of the Skin By Frank Crozer Knowles, M.D., Professor of Dermatology, Jefferson Medical College, Philadelphia. Third edition. Cloth. Price \$6.50. Pp 640 with 251 illustrations. Philadelphia: Lea & Febiger, 1935.

A complete revision is presented in this edition. The author has made a sincere attempt to include discussion of the newer items that have appeared in the literature bearing on the various subjects relating to the etiology and diagnosis of diseases of the skin. The work treats most of the cutaneous entities in a concise manner, with excellent reproductions of photographs to illustrate the material in the text. Diagnosis and differential diagnosis is discussed with amplification by differential diagnosis tables. The discussions of the subjects of allergy and allergic skin reactions, eczema, tuberculosis of the skin and tuberculids, and syphilis are worthy of special mention. The book is a good textbook of moderate size and should take its place as such for use by the medical student and as a ready reference book for the general practitioner, although it is not as comprehensive as some of the larger available textbooks.

Osnovy i dostizheniya sovremennoy meditsiny Periodicheskie sborniki pod redaktsiyey A. A. Bogomoltsa i M. Kogan. Vysnogo I. D. D. Pletereva. Vol. II [Fundamentals and Achievements of Contemporary Medicine]. Cloth. Price 15 rubles. Pp 340 with 15 illustrations. Kharkov: Meditsinskoe izdatelstvo U. S. S. R. 1934.

The aim of the publication is to issue periodically a collection of reviews on the more important subjects in medical practice. The function of these reviews is a critical evaluation of the existing knowledge as well as the presentation of the author's own views on the subject. The present volume contains papers on (1) nourishment as a factor in physiology and in pathology, (2) allergies, (3) the problem of edema, (4) functional diagnosis of diseases of the pancreas, (5) diagnosis of obscure and latent forms of malaria, (6) ileus, (7) surgery and irradiation in gynecology, (8) otosclerosis and (9) course of tuberculosis of childhood as gleaned from pathologic anatomy. The articles reflect a broad knowledge combined with a critical attitude. Each is supplemented by an extensive bibliography. They are not accompanied by summaries in a foreign language and for that reason will be available only to those who read Russian.

Food Values at a Glance and How to Plan a Healthy Diet By Violet G. Pilmer. Cloth. Price \$1.50 3s 6d. Pp 120 with 27 illustrations. New York & London: Longmans Green & Co. 1935.

This is an English version of what every housewife, cook or caterer should know about the science of nutrition. The fundamental requirements for the complete healthful diet are not only outlined but explained in a simple and concise manner. The distinctive feature of this booklet is a series of twenty-five colored charts comparing, in a graphic manner, the protein, fat, carbohydrate, mineral, water and vitamin content of the common foodstuffs. These charts, as indicated by the title of the book, offer a rapid means for comparison of food values and should be useful for teaching purposes.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Injuries Attributed to Application of Hair Dye, Idiosyncrasy Not a Defense—Before the incident that gave rise to this suit, the plaintiff's hair was black except for a streak of gray running from front to rear, near the middle of her head. When the incident occurred she was 34 years old and the disfiguring streak had been present since she was very young. To conceal it she had used henna ever since she was 19 years old, except on one occasion. Then, about ten years before the events of this case, she consulted a hair dresser and he put a hair dye of some sort on the discolored area. As a consequence, her scalp "broke out" and she suffered intense itching and was confined to her home for several days. Now, in the hope of finding a method of relief from her disfigurement less time consuming than the henna process, she sought advice at the defendant's beauty shop, in St. Louis. When she sought such advice she explained to the operator to whom she was referred the difficulty she had experienced when she had been treated by a hair dresser before. Then on advice of the operator and on her assurance that the proposed treatment would be perfectly harmless, she submitted to treatment, and the defendant's operator applied a preparation known as "notox." Following this application practically all the plaintiff's hair fell out she suffered certain local and general symptoms of an annoying and serious character, and the new hair that grew in was white. She then instituted this suit. From a judgment in her favor, the defendant appealed to the Supreme Court of Missouri, division 1.

The preparation applied to the plaintiff's scalp, "notox" had been formerly known as "inecto." Two bottles were used in giving a treatment. One of these bottles according to the testimony of a chemist, contained trihydroxybenzene sodium carbonate, saponifiable oil ethyl alcohol and water. The other contained hydrogen peroxide. Any poison that might be in the bottle first described according to the chemist's testimony 'would be overcome by the mixing of the two' and 'there should be no poison resulting from the application of the mixture to the skin.' The manager of the defendant's beauty shop testified that she had known about 3000 persons whose hair had been dyed with 'notox' and that she had known of no one except the plaintiff who had suffered any bad effects as the result of such treatment. The instructions that accompanied the package of "notox" said that 'Notox' is safe to use on all normal skins' but added "Persons who are known to have a pronounced idiosyncrasy to skin or scalp diseases or who have at the time any scratch or abrasion to the scalp should apply no form of hair coloring." The physician who attended the plaintiff when she was suffering from the results of the "notox" treatment testified that her whole body was affected but particularly the upper part that she suffered from an acute nephritis with almost complete suppression of urine and from cystitis that her eyes and ears were swollen, the canals in her ears being practically closed that she suffered from arthritis practically all her joints being involved that she suffered intense pain requiring the use of opiates, that it had been necessary to place her on a diet and that she would have to remain on a diet and that her condition was "a hair dye poison," the result of an infection a poison. This witness thought that the plaintiff's condition indicated permanency.

The defendant contended that the inflammation of the skin from which the plaintiff suffered was a result of an idiosyncrasy which she possessed to substances contained in the dye that her injuries were not caused by anything in the dye that was inherently dangerous or poisonous. A medical witness testified, however, that it could be determined by a simple test whether or not a person was susceptible to a given substance, example, 'take a piece of cotton and saturate it with the material and take another piece without anything

on it and place the two pieces on adhesive tape and put them on the skin and leave it there for a few hours, and if the individual is sensitized to the material, there may appear a red spot where the material was applied.'"

In the law of negligence, said the Supreme Court, if a reasonable person can, by the use or exercise of ordinary care, foresee the probability of effect of a given cause, it is sufficient to fasten liability, because what one knows and what one should know are equivalent in law. The court quoted with approval from *Gerlm v Bixan & Schler Co* 177 Mich 45, 143 N W 48 48 L R A (N S) 224, based on injuries alleged to have resulted from the dyed fur collar of a coat.

When the fact is once established and demonstrated by experience that a certain commodity apparently harmless contains concealed dangers and when distributed to the public through the channels of trade and used for the purposes for which it was made and sold is sure to cause suffering to and injure the health of some innocent purchaser even though the percentage of those injured be not large a duty arises to and a responsibility rests upon the manufacturer and dealer with knowledge to the extent at least of warning the ignorant consumer or user of the existence of the hidden danger.

Neither on the basis of the defendant's contention discussed above nor on the basis of any of the defendant's other contentions could the Supreme Court find any ground for reversing the judgment in favor of the plaintiff. That judgment, for \$9,500 was accordingly affirmed—*Arnold v May Department Stores Co (Mo)*, 85 S W (2d) 718.

Dental Practice Acts Corporate Practice of Dentistry Illegal in Illinois, Statutory Restrictions on Advertising Upheld—Winberry, a licensed dentist, filed a bill in the superior court, Cook County, Ill to enjoin certain officials from enforcing the Illinois dental practice act, and New System Dentists, a corporation, intervened in the proceedings. The trial court dismissed the bill and both the plaintiff and the intervener appealed to the Supreme Court of Illinois. Meanwhile Russel A. Trovillion doing business under the firm name of New System Dentists, had filed a similar bill in the city court of East St. Louis Ill. That court issued a temporary injunction against the enforcement of the act and the defendants likewise appealed to the Supreme Court of Illinois. The Supreme Court rendered a single opinion with respect to the two appeals.

The Illinois dental practice act imposes certain restrictions on advertising in connection with the practice of dentistry. Among other things, it makes it unlawful to claim superiority over neighboring dentists to advertise free dental services or examinations, or to advertise any amount as a price or a fee. It regulates the type of professional cards that may be used and the size of the name plate that may be displayed on the premises of a dental office. The various complainants challenged the constitutionality of these restrictions, contending that they have no real or substantial relation to the public health. The practice of professions, said the Supreme Court has generally been held to be subject to licensing and to regulation under the police power. Professions are not subject to commercialization or exploitation. In holding that the advertising restrictions contained in the act relate directly to public health and are well calculated to protect it, the court quoted extensively from *Smiler v Oregon State Board of Dental Examiners* 55 S Ct 570 (abstr THE JOURNAL June 1, 1935, p 2025), in which the Supreme Court of the United States upheld the validity of similar restrictions in the Oregon dental practice act.

The corporate intervener the New System Dentists, further contended that another section of the dental practice act, which prohibits corporations from practicing dentistry, was invalid. The New System Dentists, according to the evidence had made substantial investments in leases office equipment, electric signs, instruments advertising and advertising contracts prior to the enactment of the section prohibiting the corporate practice of dentistry and claimed that the enforcement of the prohibition would deprive the corporation of its property without due process of law. The corporation further contended that there is nothing detrimental to the public health in the corporate ownership of a dental office so long as all services are performed by licensed dentists. The law answered the Supreme Court is well settled that the state may deny to corporations the right

to practice professions and may insist on the personal obligation of individual practitioners. And this holding has been made regardless of any existing contracts and investments made and entered into by corporations. The act is not to be deemed discriminatory, continued the court, because it denies to corporations the right to operate dental offices and fails to prohibit corporations from operating medical institutes and clinics, drug stores and similar professional establishments. The legislature was not compelled to treat alike all those classes and was not bound to strike at all evils at the same time in the same act, or in the same way. It may deal with the different professions according to the needs of society in relation to each profession.

Accordingly, the Supreme Court held that the challenged provisions of the Illinois dental practice act were valid. It ordered that both bills for injunctions to restrain the enforcement of the dental practice act should be dismissed.—*Wimberry v Hallihan (New System Dentists Intervener) Trowlton v Hallihan (Ill)* 197 N E 552

Workmen's Compensation Acts Silicosis, Period Within Which Claim for Compensation Must be Filed—The workman's employment subjected him to the dust of burnt clay and other vitrified products disseminated by machines used in the manufacture of china, and to silica dust raised by sweeping. In 1927, after several years of employment, he developed a cough. He became chronically tired and weak. The employer discontinued business in November 1933, but at that time the workman did not consider his condition serious enough to require medical attention. The following February a physician diagnosed the workman's condition as due to a slight temporary inflammation of the lungs. In March, when he was treated for injuries sustained in an automobile accident, the physician discovered a tuberculous condition. In May, following roentgen examinations, his condition was diagnosed as pulmonary tuberculosis activated by silicosis. Attributing the silicosis to his former employment, he instituted proceedings for compensation under the California workmen's compensation act. The industrial accident commission dismissed his claim on the grounds that it had not been filed within six months after the date of the injury, as required by the workmen's compensation act. The worker then appealed to the district court of appeal, second district, division 2 California.

In cases of the character under consideration said the district court of appeal, the date of injury, in computing the limitation period set forth in the workmen's compensation act, is not the date of any particular exposure to the hazards of the employment but "the time when the accumulated effects culminate in a disability traceable to the latent disease as the primary cause, and by the exercise of reasonable care and diligence it is discoverable and apparent that a compensable injury was sustained in performance of the duties of the employment." *Marsh v Industrial Accident Commission* 217 Calif 338, 18 P (2d) 933. In the case cited, the court disapproved the holding of the commission that the statute of limitations began to run as of the date the employee first was disabled and indicated that the running of the prescription period began when the presence of silicosis was or should have been diagnosed as the primary and efficient cause of the injury. It appears quite obvious, said the court in the present case, that the claimant from the inception of his cough until he received the roentgen report in May 1934, had no reason to believe he was suffering from a compensable injury, silicosis, arising out of his employment. Even his visit to a physician in February 1934 disclosed nothing further than the given diagnosis of a slight inflammation of the lungs from which a speedy recovery was assured.

An employee, continued the district court of appeal, is not to be deprived of compensation because he incorrectly diagnoses his condition. The commission in this case found that the claimant should have discovered the character of his condition prior to the date of his final termination of work. Such a finding, concluded the district court of appeal is without support in the evidence. It is wholly unreasonable to argue that the worker should, through the exercise of reasonable care and diligence, have known in November 1933 that which his medical adviser did not discover in February 1934. The court accordingly ordered that the award of the commission

dismissing the claimant's claim be set aside and that the commission proceed with the determination of the claim.—*Price v Industrial Accident Commission of California (Calif)*, 49 P (2d) 294

Society Proceedings

COMING MEETINGS

- American Medical Association Kansas City Mo May 11 15 Dr Olin West 535 North Dearborn St Chicago Secretary
- Alabama Medical Association of the State of Montgomery Apr 21 '36 Dr D L Cannon 519 Dexter Avenue Montgomery Secretary
- American Academy of Pediatrics Kansas City Mo May 11 12 Dr Clifford G Grulee 636 Church St Evanston Ill Secretary
- American Association for Thoracic Surgery Rochester Minn May 4 6 Dr Richard H Meade Jr 2116 Pine St Philadelphia Secretary
- American Association of Anatomists Durham N C Apr 9 11 Dr George W Corner 260 Crittenden Boulevard Rochester N Y Secretary
- American Association of Pathologists and Bacteriologists Boston Apr 9 10 Dr Howard T Karsner 2085 Adelbert Road Cleveland Secretary
- American Association of the History of Medicine Atlantic City N J May 4 Dr Edward J G Beardsley 1919 Spruce St Philadelphia Secretary
- American Association on Mental Deficiency St Louis May 14 Dr Groves B Smith Beverly Farms Godfrey Ill Secretary
- American Gastro Intestinal Association Atlantic City, N J May 4 5 Dr Russell S Boles 1901 Walnut Street Philadelphia Secretary
- American Heart Association Kansas City Mo May 12 Dr H M Marvin 50 West 50th St New York Acting Executive Secretary
- American Laryngological Rhinological and Otolological Society Denver May 18 20 Dr C Stewart Nash 708 Medical Arts Building Rochester N Y Acting Secretary
- American Orthopedic Association Milwaukee May 18 21 Dr Ralph H Ghormley Mayo Clinic Rochester Minn Secretary
- American Psychiatric Association St Louis May 4 8 Dr William C Sandy State Education Building Harrisburg Pa Secretary
- American Radium Society Kansas City Mo May 11 12 Dr E H Skinner 1103 Grand Ave Kansas City Mo Secretary
- American Society for Clinical Investigation Atlantic City N J May 4 Dr J M Hayman Jr Lakeside Hospital Cleveland Secretary
- American Surgical Association Chicago May 7 9 Dr Vernon C David 59 East Madison Street Chicago Secretary
- American Therapeutic Society Kansas City Mo May 8 9 Dr Oscar B Hunter 1835 Eye St N W Washington D C Secretary
- American Urological Association Boston May 18 21 Dr Clyde L Deming 789 Howard Ave New Haven Conn Secretary
- Arizona State Medical Association Nogales Apr 23 25 Dr D F Harbridge 15 East Monroe Street Phoenix Secretary
- Arkansas Medical Society Hot Springs National Park Apr 27 29 Dr W R Brooksher 602 Garrison Ave Fort Smith Secretary
- Association for the Study of Internal Secretions Kansas City Mo May 11 12 Dr E Kost Shelton 34 Micheltorena St Santa Barbara Calif Secretary
- Association of American Physicians Atlantic City N J May 5 6 Dr Hugh J Morgan Vanderbilt University Hospital Nashville Tenn Secretary
- Connecticut State Medical Society Hartford May 20 21 Dr Charles W Comfort Jr 27 Elm Street New Haven Secretary
- District of Columbia Medical Society of the Washington D C May 6 Dr C B Conklin 1718 M St N W Washington D C Secretary
- Florida Medical Association S S Florida Apr 27 29 Dr Shaler Richardson 111 West Adams St Jacksonville Secretary
- Georgia Medical Association of Savannah Apr 21 24 Dr Edgar D Shanks 478 Peachtree Street N E Atlanta Secretary
- Illinois State Medical Society Springfield May 19 21 Dr Harold M Camp 202 Lahl Building Monmouth Secretary
- Iowa State Medical Society Des Moines Apr 29 May 1 Dr Robert L Parker 3510 Sixth Ave Des Moines Secretary
- Louisiana State Medical Society Lake Charles Apr 27 29 Dr P T Talbot 1430 Tulane Ave New Orleans Secretary
- Maryland Medical and Chirurgical Faculty of Baltimore Apr 28 29 Dr Walter Dent Wise 1211 Cathedral St Baltimore Secretary
- Medical Women's National Association Kansas City Mo May 10 12 Dr Laila A Coston Conner 333 East 68th St New York Secretary
- Minnesota State Medical Association Rochester May 3 6 Dr E A Meyerding 11 West Summit Ave St Paul Secretary
- Mississippi State Medical Association Greenville May 5 7 Dr T M Dye McWilliams Building Clarksdale Secretary
- Missouri State Medical Association Columbia Apr 13 15 Dr E J Goodwin 634 North Grand Blvd St Louis Secretary
- National Tuberculosis Association New Orleans Apr 22 25 Dr Charles J Hatfield 7th and Lombard streets Philadelphia Secretary
- Nebraska State Medical Association Lincoln Apr 7 9 Dr R B Adams 15 N Street Lincoln Secretary
- New Mexico Medical Society Carlsbad May 6 8 Dr L B Cohenour 219 West Central Ave Albuquerque Secretary
- New York Medical Society of the State of New York Apr 27 29 Dr Daniel S Dougherty 2 East 103d St New York Secretary
- North Carolina Medical Society of the State of Asheville May 4 6 Dr L B McBrayer Southern Pines Secretary
- North Dakota State Medical Association Jamestown May 17 19 Dr Albert W Skelsey 207 Broadway Fargo Secretary
- Oklahoma State Medical Association Enid Apr 6 8 Dr L S Willour 203 Ainsworth Building McAlester Secretary
- South Carolina Medical Association Greenville Apr 21 23 Dr E A Hines Seneca Secretary
- South Dakota State Medical Association Sioux Falls May 4 6 Dr John F D Cook Langford Secretary
- Tennessee State Medical Association Memphis Apr 14 16 Dr H H Shoulders 706 Church Street Nashville Secretary

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia 191 153 304 (Feb.) 1936

- Significance of Normal and Morbid Formation and Distribution of Cellular and Noncellular Constituents of Blood and Lymph J L Yates Milwaukee—p 153
- Hemolytic Anemia in Carcinomatosis of Bone Marrow T R Waugh Montreal—p 160
- Bacteriophage Service to Patients with Staphylococcal Septicemia W J MacNeal and Frances C Frisbee New York—p 170
- One Hundred Patients with Staphylococcal Septicemia Receiving Bacteriophage Service W J MacNeal and Frances C Frisbee New York—p 179
- Clinical and Electrocardiographic Picture of Coronary Occlusion Produced by Ruptured Aneurysm of Abdominal Aorta A H Elliot and R D Evans Santa Barbara Calif—p 196
- Persistent Pain in Shoulder Region Following Myocardial Infarction J Edeiken and C C Wolferth Philadelphia—p 201
- Acetyl- β -Methylcholin IV Further Studies of Its Action in Paroxysmal Tachycardia and in Certain Other Disturbances of Cardiac Rhythm J Starr Jr Philadelphia—p 210
- *Lung Puncture in Lobar Pneumonia S W Sappington and G O Favorite Philadelphia—p 225
- *Association of Erythremia and Duodenal Ulcer M Kraemer and M Asher Newark N J—p 234
- Amebiasis and Cancer of Colon A C Reed and H H Anderson San Francisco—p 237
- Production of Nephritis in Dogs by Roentgen Rays I H Page New York—p 251
- *Creatinuria in Adult Males F H L Taylor and W B Chew Boston—p 256
- Filtrable Calcium of Blood Serum I Comparison of Filtrable Calcium of Serum and Total Calcium of Cerebrospinal Fluid in Normal Hypoparathyroid and Hypoparathyroid States R Gregory and Marie Andersch Iowa City—p 263
- Causes of Death in Diphtheria and Their Prevention A L Hoyne Chicago—p 271

Lung Puncture in Lobar Pneumonia—Sappington and Favorite performed diagnostic lung puncture in sixty cases of lobar pneumonia (fifty-seven pneumococcal and three streptococcal). Positive cultures, suitable for typing, were obtained in 90 per cent, half of these within six hours. Lung puncture cultures made three and twenty-four hours after the administration of antipneumococcus serum were positive. In twenty-five cases in which both the lung and sputum pneumococcus were typed, there was 100 per cent agreement. When sputum is at once available, therefore, lung puncture is unnecessary. In twenty-two of the cases, however, the sputum was either absent or unobtainable at the time the lung puncture was made. The method is therefore recommended for early diagnosis and typing when sputum is not as quickly available. In the technique detailed, the use of a single tube of blood agar with 15 cc of plain broth at the bottom of the tube is so simple and adequate that the authors recommend it. The very rapid growth of the lung organisms in this small amount of broth with the few drops of lung blood or exudate allows early typing of the pneumococcus and usually the recognition of the type of streptococcus.

Association of Erythremia and Duodenal Ulcer—Kraemer and Asher have recently observed two patients having associated erythremia and duodenal ulcer. Both patients were Russian Jews employed in tailoring establishments. The gastrointestinal complaint was predominant in both. The first patient presented nothing of unusual interest and is offered merely because it adds another case to those already reported of the association of the two diseases. The second patient was more cooperative. A series of lavages was attempted not only to relieve the ulcer symptoms but also in the hope that the erythremia might improve as it did in the case treated by Morris and his associates. When the patient was cured of his painful ulcer symptoms and since he knew that his red blood cells were not being reduced, he was no longer content to continue

the lavages. Treatment was discontinued in March 1934. A follow up in May 1934 revealed that the patient was still free from his ulcer symptoms and was receiving roentgen therapy for his erythremia. Apparently not all cases of erythremia are benefited by lavaging addisin from the stomach. The authors believe that it is possible that they did not carry out frequent enough washings. Should a patient with erythremia and duodenal ulcer show a marked reduction in the erythrocyte count after gastric lavage gastrectomy might afford permanent cure of both disorders. This operation would remove the source of addisin and at the same time cure the ulcer.

Creatinuria in Adult Males—Taylor and Chew found creatine in the urine of fifteen adult men in amounts varying between 0 and 196 mg of creatine nitrogen in twenty-four hours. This amount of creatine was not materially changed by marked restriction of the protein intake. The authors present some data suggesting that unusual muscular activity or sudden change in muscular activity may result in an increase of the creatine excreted.

American Journal of Physiology, Baltimore

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- Circulatory and Respiratory Disturbances of Acute Compressed Air Illness and Administration of Oxygen as Therapeutic Measure A R Behnke L A Shaw Anne C Messer R M Thomson and E P Motley Boston—p 526
- Blood Sugar Level After Administration of Pilocarpine Atropine and Acetylcholine M Caroline Hrubetz New York—p 551
- Effect of Experimental Hypothalamic Lesions on Blood Sugar R W Barris and W R Ingram Chicago—p 555
- Evidence of Altered Carbohydrate Metabolism in Cats with Hypothalamic Lesions W R Ingram and R W Barris Chicago—p 562
- Effect of Carbon Arc Radiation on Blood Pressure and Cardiac Output J R Johnson B E Pollock H S Mayerson and H Laurens New Orleans—p 594
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- Phasic and Minute Coronary Flow During Acute Experimental Hypertension D E Gregg Cleveland—p 609
- Use of Lapique's Factor for Converting Voltage Capacity to Strength Duration Curves H A Blair Rochester N Y—p 620
- Effect of Carbon Dioxide on Recovery of Frog Skeletal Muscle J B Hursh Rochester N Y—p 625
- Blood Lipids During Pregnancy in Guinea Pigs E M Boyd and M D Fellows Rochester N Y—p 635
- Measurement of Superficial Temperature Gradient in Man E S Mendelson Philadelphia—p 642
- Normal Dextrose Tolerance Curves in Absence of Insulin in Hypophysectomized Depancreatized Dogs S Soskin I A Mirsky L M Zimmerman and R C Heller Chicago—p 648
- Quantitative Study on Blood Clotting Prothrombin Fluctuations Under Experimental Conditions E D Warner K M Brinkhaus and H P Smith Iowa City—p 667
- Production of Chloride Free Solutions by Action of Intestinal Epithelium R C Ingraham and M B Visscher Chicago—p 676
- Influence of Various Poisons on Movement of Chloride Against Concentration Gradients from Intestine to Plasma R C Ingraham and M B Visscher Chicago—p 681
- Observations on Path Taken by Pun Fibers from Heart W Mayne and L N Katz Chicago—p 688
- Platelets and the Structure and Physical Properties of Blood Clots L M Tocantins Philadelphia—p 709

American Review of Tuberculosis, New York

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- Mechanics of Respiration P M Andrus London Ont—p 139
- *Spontaneous Hemopneumothorax O R Jones and C I Gilbert New York—p 165
- *Hemorrhagic Pleurisy of Tuberculous Origin and Hemopneumothorax E Korol Lincoln Neb—p 185
- Relation of Intrapleural Pressure and Pulmonary Collapse in Artificial Pneumothorax E Bunta Chicago—p 203
- Comparative Value of Artificial Pneumothorax and Induced Phrenic Paralysis in Treatment of Centrally Located Isolated Pulmonary Tuberculous Cavities P Slavin Glen Gardner N J—p 215
- Some Considerations on Results of Intrapleural Pneumolysis P Dufault and A Laroche Rutland Mass—p 219
- Tuberculous Abscesses of Chest Wall as Complication of Pulmonary Tuberculosis Report of Case C W Twinn Iowa City—p 228
- Lung Abscess and Tuberculosis I Murray New York—p 236
- *Tuberculin Positive Children Observed for Various Periods Up to Five Years Study of One Thousand and Forty Six Reactors W L Weintraub Peterson N J—p 247
- Tuberculin Testing with Purified Protein Derivative and Old Tuberculin T M Palmer L S Lafitte and J A White Jr Jacksonville Fla—p 259

Spontaneous Hemopneumothorax—In analyzing the cases reported in the literature and their own case, Jones and Gilbert were impressed by the great similarity between the etiology of idiopathic pneumothorax and hemopneumothorax. The factors

seem to be the same so far as the rupture of the lung and the escape of the air into the pleural cavity are concerned whereas the accompanying hemorrhage can be explained only on the basis of chance. When an emphysematous bleb ruptures because of increased intrapulmonary or intrathoracic pressure or by external forces, the usual occurrence is the escape of air into the pleural cavity. If in the course of this rupture a blood vessel is torn in the wall of the bleb or in the attached pleural adhesion, the escape of air is accompanied by a hemorrhage, the amount of which is determined by the size of the involved vessel and also by the various intrathoracic reactions resulting from the outpouring of air and blood into the pleural cavity. The case reported by Palmer and Taft demonstrates the part which chance plays in causing either a pneumothorax or a hemopneumothorax. Treatment in cases of mild hemorrhage should be conservative, whereas patients suffering from larger hemorrhages should have the blood removed from the pleural cavity and air replaced. In some of the latter cases surgical methods may be used following the removal of blood. Prognosis in most cases is good but depends on the amount of the pleural hemorrhage.

Hemorrhagic Pleurisy of Tuberculous Origin and Hemopneumothorax—Korol points out that the hypothesis that tuberculous hemorrhagic pleurisy is caused by bleeding intrapleural granulations is no longer tenable. Hemorrhagic pleurisy is not an inflammatory condition but a hemorrhage associated with a spontaneous pneumothorax. The pneumothorax occurs first and is caused by the rupture of an emphysematous vesicle. The hemorrhage happens if there are coexistent localized adhesions preventing the complete retraction of the lung, the weight of the noncollapsed lung may tug on the adhesion and tear it. The hemorrhage then takes place from the distal stump of the adhesion. In certain cases of artificial pneumothorax the hemorrhage may be produced by the tuberculous process spreading in all directions in the treated lung, there may occur an erosion of a large blood vessel and simultaneous perforation into the pneumothorax cavity. In hemorrhagic pleurisy, as in traumatic hemopneumothorax there is the escape of all the hematologic elements from a severed blood vessel into the pleural cavity. The blood coagulates immediately before all the cells have become enmeshed. The pleural fluid contains numerous red cells but no fibrinogen and for that reason looks like blood but remains liquid on standing. In the cases of hemorrhagic pleurisy reported since 1900 the associated pneumothorax was generally recognized. Prior to the roentgen era the pneumothorax was often overlooked. The pleural adhesions and the partly functioning upper lobe produced bizarre physical conditions, rendering diagnosis difficult or impossible. However, in the majority of case reports containing detailed clinical or postmortem data the coexisting pneumothorax is strongly indicated.

Tuberculin-Positive Children Observed for Various Periods Up to Five Years—During the last three months of 1934, which marked the close of a five-year period, Weintraub made a survey of the 1,041 clinic children who had been 15 years of age or less at the time they were found to show a positive tuberculin reaction to 1 mg of old tuberculin. These children had roentgenograms taken at the time their tuberculin sensitivity was discovered and have been under observation for periods varying from six months to five years, with refilming in those cases in which it appeared most desirable after considering all existing circumstances, and in the end governed by the willingness of the patient to cooperate. The roentgenograms were read from the standpoint of showing the adult type of pulmonary tuberculosis or any evidences of the childhood type of tuberculosis. Physical examination of the chest was not found to be of any value in either the diagnosis or the follow up of children with childhood type lesions, since even the pneumonic parenchymal lesions of the primary type usually yielded no identifying physical signs. With the appearance of the adult type of involvement positive signs may be elicited, but even then as a rule only after considerable progression has occurred. The early lesions are found only by means of the roentgenogram and should be discovered before symptoms have appeared. The study comprised 508 males and 533 females. There were 542 contacts and 499 noncontacts. In the male group there were 254 contacts and 254 noncon-

tacts, and in the female group 288 contacts and 245 noncontacts. There were 639 children who were under observation for periods of more than three years and only 224 who were observed for periods of less than two years. In the male group, 50 per cent were contacts, 26 per cent showed roentgen evidence of childhood type involvement alone, while 10.6 per cent of the noncontacts showed similar involvement. In the female group, 54 per cent were contacts, 24 per cent showed roentgen evidence of childhood type involvement alone, with similar conditions in 12 per cent of the noncontacts. With respect to childhood type lesions, as demonstrated roentgenologically by the usual procedure, there was no significant variation according to sex. With respect to adult type pulmonary tuberculosis an entirely different picture is presented. Six cases were found in the final roentgen examination of these 1,041 children, however, during the course of the study previous to the final survey, five children had been found who had developed the adult type of disease as shown by the roentgenogram, after they had previously been under observation and yielded a positive tuberculin test and a roentgenogram negative for the adult type of pulmonary tuberculosis.

Anatomical Record, Philadelphia

64 147 276 (Jan 25) 1936

- Vaginal Smears of Rats as Influenced by Frequent Examinations. F. E. Lmery and E. L. Schwabe. Buffalo—p 147
- Preparation of Multicolored Corrosion Specimens. J. K. Narat, J. A. Loef and Mitzi Narat. Chicago—p 155
- Hair Growth on Skin Transplants in Immature Albino Rat. E. O. Butcher. New York—p 161
- Tensile Strength of Human Tendons. A. E. Cronkite. Stanford University. Calif—p 173
- Development of Cochlea in Gecko with Especial Reference to Cochlear Lagena Ratio and Its Bearing on Vocality and Social Behavior. L. T. Evans. Boston—p 187
- Influence of Thyroidectomy on Effectiveness of Gonad Stimulating Hormones. S. L. Leonard and I. B. Hansen. New York—p 203
- Effect on Chick of Some Gonadotropic Hormones. W. R. Breneman. Madison Wis—p 211
- Studies on Uterine Growth. III. Local Factor in Rabbit Uterus. J. E. Markee, W. M. Wells and J. C. Hinsey. Palo Alto Calif—p 221
- Uterine Bleeding in Spinal Monkeys. J. E. Markee, J. H. Davis and J. C. Hinsey. Palo Alto Calif—p 231
- Growth of Intra Ocular Endometrial Transplants in Spinal Rabbits. J. E. Markee, R. A. Pasqualetti and J. C. Hinsey. Palo Alto Calif—p 247
- Excretion of Theelin in Urine of Guinea Pigs with Irradiated Ovaries. Ida Genter Schmidt. Cincinnati—p 255
- Micromelia of Chicken Embryos and Newly Hatched Chicks Caused by Nutritional Deficiency. W. Landauer. Storrs Conn—p 267

Annals of Surgery, Philadelphia

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- *Bilateral Trigeminal Tic. Its Association with Heredity and Disseminated Sclerosis. W. Harris. London, England—p 161
- Penetrating Wounds of the Brain. Experimental Study. C. Pilcher. Nashville Tenn—p 173
- Pulsating Tumors of Sternum. Report of Four Cases. G. Crile Jr. Cleveland—p 199
- Cholangiography. Visualization of Gallbladder and Bile Ducts During and After Operation. N. F. Hicken, R. R. Best and H. B. Hunt. Omaha—p 210
- Diverticulosis of Small Intestine. H. C. Edwards. London, England—p 230
- Problem of Low Sigmoid Growth. F. W. Rankin. Lexington, Ky. and A. S. Graham. Richmond Va—p 255
- Carcinoma of Limitis Plastica Type Involving Intestine. C. F. Dixon and G. A. Stevens. Rochester, Minn—p 263
- Acute Regional Ileitis. J. G. Probst and G. E. Gruenfeld. St. Louis—p 273
- *Unusual Inflammatory Lesions of Ileocecal Region. J. H. Powers, Cooperstown N. Y.—p 279
- Primary Carcinoma of Fallopian Tubes. Report of Two Cases. H. Charache. Brooklyn—p 290
- Fractures of Humerus. Analysis of Treatment and Results of Two Hundred Fractures. M. C. O'Shea. New York—p 297
- Osteitis Pubis Following Suprapubic Prostatectomy. J. A. Lazarus. New York—p 310

Bilateral Trigeminal Tic—Harris has records of forty one cases of chronic spastic paraplegia complicated by trigeminal tic. In seven there was bilateral trigeminal tic. Very rarely did the neuralgia commence before organic signs of spinal cord disease appeared. In addition to these, in one family the father had trigeminal tic and his daughter developed typical disseminated sclerosis, and in another family the mother had neuralgia and her son developed disseminated sclerosis. In another the aunt was treated for typical bilateral tic and her

meece for trigeminal tic complicating disseminated sclerosis. The author has seen in many instances familial heredity of typical trigeminal tic, in one family no less than nine members appeared to have suffered from it.

Unusual Inflammatory Lesions of Ileocecal Region—Powers calls attention, by the use of three clinical reports, to the interrelationship of inflammatory lesions of the terminal ileum, appendix, cecum and ileocecal lymph nodes. The first patient had diffuse inflammation of the terminal ileum, appendix and cecum and secondary involvement of the ileocolic nodes in the mesentery, in the second case the tip of an inflamed appendix was adherent to a mass of enlarged mesenteric nodes, the third case was one of primary typhlitis with localized ulcerative, inflammatory changes in the wall of the cecum. Regional ileitis, acute nonspecific inflammation of the cecum and mesenteric lymphadenitis in the ileocolic angle are discussed. In view of (1) the similarity between the lymphatic apparatus of the appendix and terminal ileum, (2) the frequency of mesenteric adenitis as an accompaniment of regional ileitis and (3) the lack of interest in the ileocolic nodes in the presence of obvious appendicitis, it is quite possible that these nodes are involved more frequently than is generally suspected. The author believes that the prompt subsidence of symptoms following appendectomy in Wilensky's early cases, in the cases reported by Rockey and in his first two cases, and the anatomic relationship of the lymphatic channels of the appendix to the ileocecal lymph nodes suggest that the appendix does play some part in the etiology of this form of glandular inflammation.

Archives of Neurology and Psychiatry, Chicago

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- *Further Observations on Tumor of Pineal Body G Horrax Boston —p 215
Amyotrophic Lateral Sclerosis with Involvement of Posterior Column and Sensory Disturbances Clinicopathologic Study C Davison and I S Wechsler New York —p 229
Encephalographic Studies in Cases of Extrapyrarnidal Disease S P Goodhart B H Balser and I Bieber New York —p 240
*Electromyographic Study of Myotonia D B Lindsley and E C Curnen Boston —p 253
Differential Diagnostic Types of Suicide G Zilboorg New York —p 240
Relationship Between Pressure in Veins on Nerve Head and Cerebrospinal Fluid Pressure F A Gibbs Boston —p 292
Cerebrospinal Hydrodynamics VII Effects of Intravenous Injection of Hypertonic Solutions of Dextrose J H Masserman, Chicago —p 296
Peripheral Venous Blood Pressure in Schizophrenic and in Normal Subjects C M Krinsky Newark N J and J S Gottlieb Worcester Mass —p 304
Unilateral Traumatic Selective Degeneration of Pallidum and Striatum W G Spiller Philadelphia —p 310
Epileptiform Attacks in Cases of Glioma of Cerebral Hemispheres Relation to Location and Histologic Type of Glioma C F List Ann Arbor Mich —p 323

Further Observations on Tumor of Pineal Body—Horrax adds two cases of tumor of the pineal body to the literature. In one, in an adult, the growth was partially removed and verified at operation. Subsequent to operation and roentgen therapy the patient had remained well and in active life for one and one-half years with no return of symptoms of intracranial disturbance. In the second case, in a boy 10 years of age, the tumor was verified only by ventriculography. The child presented the typical syndrome of Pellizzi: macrogenitosomia praecox. This patient also had had a period of normal activity for a year following decompression and roentgen therapy. After roentgen therapy he became more normally youthful in appearance. This is at least suggestive of some possible function of the pineal body concerned with the regulation of secondary sex characteristics.

Electromyographic Study of Myotonia—Lindsley and Curnen describe a case of congenital myotonia and a case of myotonic dystrophy. The myotonia, which appeared to be the same in the two cases was studied electromyographically. The after contraction of myotonic muscles, which persists after the cessation of voluntary effort or brief mechanical stimulation, is accompanied by action currents. This indicates that the phenomenon is neurogenic rather than myogenic. The evidence presented favors the hypothesis that the after-contraction of myotonia is of reflex origin and is due to the persistent discharge of hyperexcitable sensory end organs in the muscle.

Injections of ergotamine tartrate, pilocarpine hydrochloride and epinephrine hydrochloride have proved ineffective in relieving the myotonic condition although calcium gluconate and calcium chloride have significantly reduced the amount and duration of the after contraction.

Peripheral Venous Blood Pressure in Schizophrenic and in Normal Subjects—Krinsky and Gottlieb obtained venous blood pressure values by the direct method under basal as well as nonbasal conditions for fifty schizophrenic patients and twenty-five normal subjects. The mean pressure for patients and normal controls under both basal and nonbasal conditions was 11 cm of blood. The mean individual variation of the peripheral venous pressure was less in schizophrenic patients than in normal subjects. Under basal conditions the schizophrenic patient showed an average standard deviation of 0.83 cm while the normal control showed an average standard deviation of 1.45 cm. Under nonbasal conditions the values were 0.92 and 1.94 cm respectively. The peripheral venous pressure did not vary in accordance with the arterial blood pressure. No significant relationship was indicated between the degree of peripheral cyanosis and the level of the venous blood pressure.

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Malaria in Control of Atrophy of Optic Nerve—Clark reports twelve cases in each of which syphilis of the central nervous system was present with syphilitic invasion of the optic nerve and visual pathways. There were eight patients with tabes and two each with dementia paralytica and dementia paralytica of the tabetic form. The condition of eight patients improved under therapy. One of the eight patients was treated by injection of typhoid vaccine intravenously because she was resistant to the strain of the organism of tertian malaria used, the other seven were treated with induced malaria. There was no improvement in four of the patients, and the ocular condition continued to progress until blindness resulted. This was to be expected owing to the advanced state of atrophy of the optic nerve that was present before treatment with malaria was started. The state of the pupils was unchanged in all twelve patients. If invasion of the optic nerves and visual pathways has taken place, it is prudent to treat the patient as early as possible with malaria. Malaria does not possess magic power to restore function to an optic nerve with advanced atrophy of the tissue but induced early it enables the natural barriers to syphilis to be established before vital tissue has lost its function. The optic nerves chiasma and optic tracts are involved by the same meningeal infiltration that is largely responsible for the damage of syphilis to other structures. When this infiltration is arrested before maximal damage has occurred, the decline of vision is halted and the patient is saved from blindness. Additional factors probably play a minor part in the defense developed against the spirochete after malaria: vasodilatation and increased metabolism. For some patients there is a mild hyperemia of the optic disks during the paroxysm of malaria. The factors of fever, vasodilatation, increased body metabolism and stimulation of the reticulo endothelial system appear to be the means by which malaria and other acute febrile diseases offer to the body an effective defense against syphilis of the central nervous system.

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Experimental Encephalography with Anesthetic Gases

—It occurred to Aird that an anesthetic gas might qualify as the desired agent in encephalography. Since only a limited amount of gas can be injected and since this is relatively inert except as absorbed, it seemed conceivable that even strong anesthetic gases might prove safe, any sedative or narcotic effect being the result of its absorption and concentration in the central nervous system. Also the local effect of such a gas on the nerve tissues with which it was in direct contact might be to deaden them and abolish noxious reflexes, in contrast to the effect of ordinary gases. The duration of its presence would depend on such factors as its rate of diffusion and solubility in the spinal fluid and in the lipoids. The investigation of such a possibility seemed worth while. A state of light anesthesia induced by sodium amytal finally proved satisfactory. The dose necessary varied with the animal, but amounts from 22 to 32 mg per kilogram of body weight were found satisfactory. With such doses the animal was quiet, good roentgenograms could be obtained easily, the injection of procaine hydrochloride and puncture of the meninges aroused the animal only briefly, and yet reflexes, muscle tension and often a fair degree of consciousness remained, so that superimposed irritative or narcotic effects of the injected gases usually could be determined readily. The usual routine of encephalography was as follows. After the intravenous administration of sodium amytal and the making of an initial plate of the skull as a control, the dog was strapped on its side to the table, and with aseptic technic and with local anesthesia a lumbar puncture was performed. The table was elevated, and intermittently between collections of spinal fluid the gas to be tested was injected slowly, by means of a syringe, into the subarachnoid spaces. Rotation of the head aided drainage. A three-way petcock attached to the injecting syringe and connected by tubing to the controlling valve of the gas tank afforded a simple and convenient closed system for handling the gases. Replacement of the spinal fluid by gas was carried as far as possible usually until bubbles returned through the needle. Then the needle was withdrawn, and another lateral roentgen view of the skull was made. If the ventricular outline appeared other views were taken to follow the course of the injection. Throughout the entire procedure pulse, respiration, color, reflexes and muscle tension were observed closely and recorded. With improvements in technic standardization of routine and experience, this method proved satisfactory for determining the following information on the various anesthetic gases: (1) ease of handling, (2) early irritative effect, (3) sedative or narcotic effect, (4) after-effects, both immediate and late, (5) safety, and (6) roentgen results including the time of absorption. Ethyl chloride, divinyl chloride, ether, vinyl chloride and acetylene proved unsatisfactory for encephalographic use; the first three being decidedly dangerous. In limited series the effects of oxygen and those of cyclopropane appeared to be comparable to each other and definitely superior to those of air. Because of their safety, good roentgenographic results, minimal irritation, definite sedative effect and lack of ill effects, either clinically or pathologically, nitrous oxide and ethylene seem ideal agents for encephalography.

Posttraumatic Acute Bone Atrophy—According to Gurd the results of treatment appear to prove that the process of acute bone atrophy is reversible, the length of time required to bring about clinical cure is likely to be prolonged for from six months to an even longer period. With reference to treatment, the most important memorandum is that pain should be avoided and, more particularly, that anything in the nature of forcible manipulation, either with or without an anesthetic, should be excluded. In the case of the upper extremity, if further insult to the tissues is avoided the course is toward repair. The patient should be warned that no painful movements of any sort should be undertaken. Both snugly fitting unpadded plaster casts and physical therapeutic measures may be employed especially diathermy with hot bathing at home. The latter procedure as a rule, pleases the patient better and also is followed by rather better results. In the case of the lower extremity, the unpadded walking plaster cast, which is applied after absolutely all interstitial edema has been disposed of and to which a felt heel has been added, is the method of choice. If care is applied to remodel the foot, particularly with reference to overcoming pronation and flattening of both arches and if the patient walks sufficiently, the results are satisfactory. Sympathectomy as recommended by Fontaine and Herrmann has been carried out in one case. The result was not favorable, but the evidence which these authors supply cannot be ignored.

Surgical Treatment of Chronic Ulcerative Colitis—During the last four years Kunath treated eighteen patients for chronic ulcerative colitis by the establishment of an appendicostomy or a cecostomy, with subsequent irrigation of the diseased intestine through a tube. A series of thirty-five cases of chronic ulcerative colitis has been surveyed to evaluate, if possible, the relative merits of the various operative procedures used. He has found appendicostomy and cecostomy with subsequent irrigation of the diseased intestine a useful procedure in selected cases. The study emphasizes the limitations of all forms of surgical treatment and the apparent futility of expecting cures from any procedure less than colectomy. The author feels that any blanket form of therapy, i. e., one operative procedure used on all types of patients as they come, cannot give the best results. By carefully analyzing each case, by using certain procedures only in selected cases and by remembering certain limitations of each type of operation the present results can be improved to an appreciable degree. A simple classification of cases has been suggested, which may point the way toward more intelligent treatment. This outline of treatment represents only a transient opinion rather than a permanent policy. There is no ideal method of treatment, and one is usually faced with the problem of choosing the least vicious of several evils. However, surgery has something definite to offer these patients, and the problem involves the choosing from a number of procedures at one's disposal the one most suited to each case.

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Clinical Experiences with Wheat Germ Oil (Vitamin E)—Watson prescribed wheat germ oil to sixty-five patients respecting whom spontaneous abortions, threatened

abortions or involuntary sterility constituted the principal abnormalities. The patients have been classified into four groups: group 1, pregnant women who had experienced two or more spontaneous abortions previous to receiving wheat germ oil treatment (habitual abortion), group 2, pregnant women who had experienced one spontaneous abortion previous to receiving wheat germ oil treatment, group 3, cases of threatened abortion, and group 4, women who sought medical advice because of failure to become pregnant (sterility group). The patients included in groups 1 and 2, with but two exceptions, were pregnant at the time the treatment with wheat germ oil was started. The purpose of the treatment was to favor the continuation of the pregnancies. The patients in group 3 received the oil only after the onset of the symptoms of threatened abortion, and its administration was a part of the treatment for that condition. Those in group 4 were not pregnant at the time the oil was used, although several had been pregnant previously. The object of the treatment in these cases was to facilitate impregnation. In the majority of the abortion and sterility cases no therapeutic measures except the use of wheat germ oil were instituted. But the patients with signs of threatened abortion were subjected to the usual management for that condition and received wheat germ oil. Of eleven patients who had sustained from three to fifteen spontaneous abortions prior to the exhibition of wheat germ oil, nine went to term and were delivered of healthy living children. Six of the patients under this regimen completed a pregnancy for the first time. Of the seventeen wheat germ oil treated patients, each of whom had had two spontaneous abortions, twelve gave birth to healthy living children after the use of the oil. In five cases the pregnancies were interrupted by spontaneously occurring abortions. Of nine treated patients, each of whom had experienced one previous spontaneous abortion, eight gave birth to healthy, living children. In the ninth one abortion took place a short time after the use of the oil was commenced. Fifteen patients were treated for the symptoms of threatened abortion, the majority after bleeding had begun. In eleven of these the pregnancies continued uninterruptedly to terminate in natural deliveries but in four instances the abortions became inevitable. Thirteen non-pregnant women were given wheat germ oil with a view to facilitating impregnation. Six of these had never conceived and therefore constituted examples of primary sterility. Each of the remainder had been pregnant at least once, which placed them in the category of so-called secondary sterility. Seven had had one or more abortions, but only one woman had given birth to a living child. Pregnancy did not ensue in any of the patients in this group. Conception occurred in two of Vogt-Moller's four sterility cases and living babies were delivered. The experiments lend some support to the surmise that vitamin E is a factor in the advancement of pregnancy to a natural termination.

Hemoglobin of Normal Children and Certain Factors Influencing Its Formation—Ross and Summerfeldt determined the hemoglobin content of four groups of normal children by the Newcomer method. The first group consisted of seventy-seven boys from 11 to 14 years of age from business and professional homes, who were day pupils attending a private school. In the second group there were 151 boys and girls from 5 to 14 years of age. These children were from average homes of the working class. The third group comprised thirty boys from 10 to 14 years of age who were living in an institution in the city, and the fourth group consisted of seventy-two boys and girls from 5 to 14 years of age who were living in an orphanage in the country. It was found that the hemoglobin content of the blood of normal children is lower than the accepted adult standards and varies with the age and economic status of the child. The addition of an iron free and copper free vitamin B complex concentrate to a diet considered adequate according to the present dietary standards resulted in a moderate increase in the hemoglobin content of the blood of normal children. The substitution of a cereal mixture rich in iron and copper containing vitamin B complex for the ordinary cereals contained in a diet considered adequate according to the present dietary standards resulted in a marked increase in the hemoglobin content of the blood of normal children. A further increase in the iron content of this special cereal mixture bringing the children's daily intake of iron to 36 mg. produced a still further

increase in the hemoglobin content of the blood. The optimal iron intake for hemoglobin formation in normal children is greater than the present accepted standards.

Postanesthetic Leukocytosis—Boyd ascertained the lipid composition of the white blood cells immediately before and again at an interval of from one-half to twenty hours after anesthesia in a group of noninfected patients submitted to various surgical procedures involving a relatively small loss of blood. The type of operation was not found to affect the results. The anesthetic was either following induction by chloroform or nitrous oxide. Morphine and atropine were given before operation. The white cells were separated from samples of about 50 cc of blood, ground with cleaned sand and extracted with alcohol-ether. The resulting extracts were analyzed by the Bloor oxidative micro methods as modified by Boyd. It was found that the phospholipid content of blood leukocytes was lowered by anesthesia, the most marked decrease occurring after the third hour after operation. The percentage of free cholesterol exhibited minor inconstant changes. When the concentration of neutral fat was high before operation it became lowered after, and, conversely when low before it became increased after anesthesia. The changes for cholesterol esters were similar to those for neutral fat, the direction of the effect of anesthesia depending on the initial concentration of this lipid. From these studies it is concluded that the polymorphonuclear leukocytes mobilized into the circulating blood after anesthesia contain decreased amounts of phospholipid, about the same percentage of free cholesterol and a medium value for cholesterol esters and neutral fat, as compared with the leukocytes present before anesthesia. The leukocytosis of anesthesia, therefore, differs chemically from the leukocytosis of fever and infection. A review of the literature revealed that there is a species variation among animals in the effect of anesthesia on the white cell count.

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Mental Picture of Surgical Clinics During the Past Fifty Years as Observed by an Internist—Retrospectively. J. Ritter, Miami Fla.—p. 177.
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- *Some Observations on Female Urology with Especial Reference to Ectopic Kidneys and Urethrography W E Stevens San Francisco—p 241

Pyelitis and Cystic Ureteritis—Hinman and his associates describe cases which show that cystic disease of the ureter and renal pelvis may be associated with ureteral obstruction and infection calculi carcinoma and bilharzial infestation and possibly with the elimination of toxic substances through the urinary tract. The gross pathologic changes may be described briefly as cystic structures varying from microscopic to several centimeters, from spherical to ovoid, and from embedded to pedunculated. They vary from clear to whitish yellow brown gray, bluish or hemorrhagic. The contents may be thin and watery or thick, viscid and colloidal. As to pathogenesis four hypotheses are advanced: (1) the occlusion of crypts in the mucous membrane, with retention of the secretions of its epithelium, (2) the pathologic blocking and secretion of glands already present in the urinary passages, (3) psorospermial infestation and (4) the "cell nest theory" of von Brunn. Most of the evidence is in favor of von Brunn's theory. A chronic inflammation of the mucous membrane produces downward proliferation of the surface epithelium. These downgrowing buds become pinched off and form epithelial cell nests in the submucosa. These in turn proliferate their centers degenerate and they push upward toward the lumen of the urinary tract as cystic structures. A history of chronic infection of the urinary tract associated with hematuria should suggest it and cystic cystitis almost always is found by cystoscopy. The diagnosis is made by ureteropyelography. The pyelogram may show two types of filling defects, one of the pelvis the other of the calices. The ureterogram shows a characteristic mottling caused by nonopaque filling defects in the outline of the ureter. Other pathologic conditions that might be confused with this picture are those affecting the pelvis—early polycystic kidney and chronic pyelonephritis—and those affecting the ureter—non-opaque stones blood clots multiple papillomas or bubbles of air. The first step to be taken in the treatment of this condition

is obviously the removal of the source or cause of the inflammatory process. The passage of large ureteral catheters and irrigation with silver nitrate solution, as suggested by Kindall and practiced by the authors with some measure of success, would seem to be the conservative course. The relief of obstruction, when present, is the first consideration. Pyelotomy, ureterotomy or even nephrectomy may be indicated when the disease is unilateral and advanced to the point of renal insufficiency which has not responded to conservative measures.

Some Observations on Female Urology—Stevens cites a number of cases that illustrate the similarity in symptomatology often existing in pathologic conditions of the female urinary and generative organs and emphasize the importance of examination of the uterus and adnexa as well as the urinary tract in most instances. Pain and other symptoms associated with ectopic kidneys are sometimes suggestive of lesions of the female generative organs and pyelography will frequently reveal unsuspected pathologic changes. Both cystography and cystoscopy are of value in the diagnosis of bladder displacements and deformities following childbirth and pelvic surgery. Urethral strictures are common in women. The majority are located at the external meatus and may be congenital or acquired. They are frequently responsible for pathologic changes in the upper part of the urinary tract and for a large variety of subjective symptoms, including pain in various locations. The early detection and correction of strictures and other conditions responsible for obstruction of the female urethra is obviously of great importance. The average size of the normal urethra in the adult female is F 26. The average size of urethral strictures is F 21.5. Urethrography is a valuable diagnostic procedure. It is frequently indicated in the presence of symptoms suggestive of pathologic changes in the urinary tract in women. Lesions of the urethra play an important part in female urology.

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- Dermoid Teeth in External Auditory Canal with Comments on Teratomas and Dermoids in General G G Marshall Rutland Vt—p 202

Question of "Influenza" and Atypical Pneumonia—

Cass observed a group of fifty-three cases, each of which it was felt justifiable to call "influenza" (Francis). These patients all recovered and the only points of interest were that six developed mild pansinusitis with symptoms of this complication for a duration of from four to seven days. These cases all responded to medical treatment. Two other patients developed acute otitis media, both unilateral, and both required paracentesis. The second group consisted of seventeen cases in which, in addition to the clinical picture of influenza, definite signs of involvement of the chest were present and the active course of the disease extended over a period of from five to sixteen days. The third group consisted of two cases, both fatal, in which hemolytic streptococcus empyema developed. In addition to the symptoms considered necessary for diagnosis, all patients complained early of vague abdominal distress with marked distention and anorexia. The principal complaint in addition to prostration was a cough, this being harsh, dry, nonproductive and coming in paroxysms. Paroxysms were particularly frequent during the latter part of the afternoon and during the night. They were also brought on at any time by movement or physical effort on the part of the patient, or marked change in temperature of the room. The patients with involvement of the chest were subject to alarming waves of cyanosis, in addition to the constant appearance of extreme toxicity. The two patients with empyema complained of a severe pleural type of pain. The temperature was of the septic type and varied only in degree and duration in the different groups. The temperature returned to normal in all cases by lysis. The pulse, characteristically, was not so high as one would expect in all except the fatal cases. The typical case of influenza is so similar to what is commonly called "grip" that the diagnosis is probably not made unless there is a recognized epidemic present. The complications of the typical cases are usually infections of the sinuses and ears. These seldom require surgical treatment other than paracentesis of the ear. The cases of pulmonary involvement included in this material were strikingly similar. Many other pneumonias were seen with white blood counts of from 6 to 20 thousand and were not proved pneumococcal pneumonias but the clinical pictures were so different one from the other that no consistent material could be obtained from them. With the present available data, it is impossible for the author to state that the cases classified as group II were not simply complications of influenza. However, their clinical pictures were so strikingly similar and hemolytic streptococci were so commonly found associated with the disease that it is difficult

for him to classify them other than as a specific type of pneumonia. They were not seen during the height of a severe influenza epidemic and their similarity thus conforms to the proper time element. The two fatal cases definitely terminated with a hemolytic streptococcus empyema or pleurisy, and undoubtedly also a septicemia.

New Orleans Medical and Surgical Journal

88 485 542 (Feb.) 1936

- Causes and Treatment of Dysmenorrhea with Especial Reference to Value of Resection of Superior Hypogastric Plexus in Obstinate Cases T B Sellers and J T Sanders New Orleans—p 485
- Vaginal Hysterectomy Its Indications Technique and End Results C H Tyronne New Orleans—p 490
- Pyloric Occlusion Following Ingestion of Sulfuric Acid U Maes New Orleans—p 494
- Early Recognition of Carcinoma of Colon and Rectum D C Browne New Orleans—p 495
- Agranulocytic Angina Report of Two Recent Cases in Children P L Perot Monroe La—p 500
- Pituitary Infantilism S Jacobs New Orleans—p 506
- Gonococcal Conjunctivitis Analysis of One Hundred and Fifty Six Cases H F Brewster New Orleans—p 508
- Treatment of Bronchial Asthma with Especial Reference to Intravenous Administration of Hydrochloric Acid U Giles M Gardberg and J B Dismukes New Orleans—p 510

New York State Journal of Medicine, New York

36 139 218 (Feb 1) 1936

- *Acute Demyelinating Disseminated Encephalomyelitis A Ferraro and C A Jervis New York—p 139
- Observations of Clinical Course of Arteriosclerotic Auricular Fibrillation I T Bishop and L F Bishop Jr New York—p 156
- The Practical Management of Dermatitis with Allergic Etiology H H Bauckus and C F Siekmann Buffalo—p 159
- Study of Infant Care in a Rural Community Marjorie F Murray and Ruth I Lyman Cooperstown—p 165
- Pelvic Infection Laboratory Aids in Diagnosis and Treatment T C Peightal New York—p 173
- Pulmonary Tuberculosis Serial Roentgen Studies in Superinfections H K Taylor New York—p 181

Acute Demyelinating Disseminated Encephalomyelitis—Ferraro and Jervis report a case of acute demyelinating encephalomyelitis characterized pathologically by (1) two large diffuse symmetrical foci of demyelination in the medullary substance of the cerebral hemispheres comparable to the foci described in diffuse sclerosis, (2) several areas of concentric demyelination, i e., comparable to the one described in the so-called concentric sclerosis and (3) numerous small patches of demyelination scattered throughout the cerebral hemisphere, the basal ganglia, the pons and the medulla oblongata and comparable to the ones described in acute multiple sclerosis. The authors stress the importance of the association in their case of clinical and pathologic features of diffuse sclerosis, concentric sclerosis, acute multiple sclerosis and disseminated encephalomyelitis. A brief account of the opinions of various authors as to the relationship of these conditions is given and the belief is expressed that diffuse sclerosis, concentric sclerosis, acute multiple sclerosis and disseminated encephalomyelitis might constitute a large nosologic group with identical underlying clinical and pathologic observations. The question whether the same etiologic factors are at the base of the various conditions mentioned is not ready for solution. Some experimental data, however, point to the fact that in the nervous system different etiologic factors may produce pathologic changes common to acute encephalomyelitis, multiple sclerosis and diffuse sclerosis.

Northwest Medicine, Seattle

35 39 78 (Feb.) 1936

- Clinical Management of Poliomyelitis E B Shaw San Francisco—p 39
- Epidemic Meningitis Treated by Intravenous Injections of Meningococcus Antitoxin J R Karel Seattle—p 48
- Meningo Encephalitis Case with Especial Reference to Organism Found in Spinal Fluid M B Marcellus E I Crouch San Francisco and M C Terry Palo Alto Calif—p 50
- Physiologic Considerations in Cardiac Disease L A Crandall Jr Chicago—p 52
- Abruptio Placentae H H Skinner Yakima Wash—p 59
- Peptone Broth in Peritonitis H Feagles Chehalis Wash and C G Bain Centralia Wash—p 62
- Fractures of Pelvis W R Cubbins Chicago—p 63

Ohio State Medical Journal, Columbus

32 97 192 (Feb 1) 1936

- The Heart as a Surgical Organ with Especial Reference to Development of New Blood Supply by Operation C S Beck Cleveland —p 113
- Practical Use of Bacteriology by the Ophthalmologist S R Gifford Chicago —p 118
- Diabetic Coma T P Sharkey Dayton —p 123
- Some Industrial Aspects of Acute Perforation and Hemorrhage of Peptic Ulcer A J Beams Cleveland —p 130
- Observations on Diencephalon and Gastrointestinal Tract J D O'Brien Canton —p 134
- Multiple Hemorrhagic Sarcoma of Skin (Kaposi) C T Pearce and L E Walker Cincinnati —p 137
- Development of Preventive Medicine I Van Orsdall Columbus —p 139
- Case Presenting Problems in Clinical Medicine Numerous Attacks of Mild Abdominal Cramps for Four Years Prior to Onset of an Acute Abdomen H L Reinhart and G I Nelson, Columbus —p 142

Oklahoma State Medical Assn Journal, McAlester

29 39 68 (Feb) 1936

- *Massive Onlay Bone Grafts of the Upper Extremity W K West Oklahoma City —p 39
- Diabetes Mellitus L S McAlester Muskogee —p 46
- *Thymus Syndrome in the New Born H C Graham Tulsa —p 49
- Urethral Stricture S F Wildman Oklahoma City —p 54

Massive Onlay Bone Grafts—West warns that the following points should be considered in performing massive onlay of bone grafts in cases of nonunion of fractures of the upper limbs 1 It is not a simple procedure and trained assistants are considered necessary in order that the operation be done efficiently and in as little time as possible 2 There is danger of tourniquet paralysis in major bone operations of the arm. Therefore the tourniquet is dispensed with 3 In repairing fractures of the lower part of the humerus radial nerve injuries are not unusual, but wrist drop following the operation should not be a cause of anxiety, provided the surgeon is certain that there has been no division of the nerve Retraction, which is necessary, quite often causes sufficient pressure to cause temporary loss of radial nerve function 4 Bone grafts for nonunion in infected compound fractures should not be done until one year has elapsed from the time of cessation of drainage 5 The condition of the skin should be perfect in the region of the fracture and in that part of the leg from which the graft is removed and it is not feasible to operate through heavy adherent scars 6 In cases in which metal plates, beef bone or ivory plates have been used unsuccessfully and have resulted in bone atrophy, it is better to remove them as a preliminary operation to a second or major graft operation 7 In cases of fracture of the upper humerus, the upper end of the graft should be driven up into the head, thus making a secure anchorage. The lower end of the graft can be maintained because cortical bone is usually sufficiently solid 8 The operation for the bone grafting of the two bones of the forearm at the same time is a formidable procedure Therefore, if it is at all possible, conservative treatment should be used until at least beginning union is observed in one bone An onlay graft fixation of one bone tends to splint the forearm to a degree that union will be obtained in both bones In case nonunion persists in the unoperated bone a second bone graft operation may be done But, to do grafts on the two bones at the same time calls for smaller grafts or the necessity of removing the grafts from the two legs at the same time

Thymus Syndrome in the New-Born—Graham discusses his observations in children from 6 days to 6 months of age who presented the thymus syndrome Besides the symptoms of cyanosis, stridor, suffocative attacks and dyspnea usually referred to four other symptoms were observed Five of the seven infants were blue babies at birth A rather large percentage of babies are blue at birth owing to various causes The thymus baby is usually among them A poor gain in weight or an actual loss was observed in four cases The more severe the disease, the more pronounced is the loss of weight And any gain in weight may be quite fickle Mucus in the vomitus and feces especially the latter, was present in three cases Cervical retraction was present in three of the seven cases, and in one case a tentative diagnosis of meningitis had been made Capper and Schless make the statement, with which the author concurs, that before a diagnosis of thymus syndrome can be made one must differentiate and exclude atelectasis

cerebral hemorrhage congenital heart disease, laryngeal anomalies or infections, bronchitis or pneumonia, hypertrophied mediastinal glands, retropharyngeal, peritonsillar or cervical abscess, asthma, laryngospasm or tetany of the new-born congenital laryngeal stridor, micrognathia, large adenoids, breath holding, macroglossia, tongue swallowing and foreign body in the pharynx or larynx Roentgen irradiation was the only treatment that the author used in his cases The number of treatments ranged from one to six The size of the gland as shown roentgenographically does not necessarily indicate the severity of symptoms Simple hyperplasia or lateral enlargement of the thymus gland should not be diagnosed as thymus disease on the basis of roentgen observations alone, but it should be carefully observed and certainly so diagnosed when symptoms appear And, conversely, in the presence of thymic symptoms and absence of positive roentgen observations he feels that immediate and adequate roentgen therapy should never be denied any child

Public Health Reports, Washington, D C

51 109 138 (Jan 31) 1936

- Sickness Among Male Industrial Employees During the Third Quarter and the First Nine Months of 1935 D K Brundage —p 109
- 51 139 156 (Feb 7) 1936
- Calcium Cyanide Dust in Ship Fumigation C L Williams —p 139
- 51 157 180 (Feb 14) 1936
- Results of Field Studies with Brodie Poliomylitis Vaccine A G Gilliam and R H Onstott —p 160

South Carolina Medical Assn Journal, Greenville

32 130 (Jan) 1936

- Acne Vulgaris J R Allison Columbia —p 1
- Lateral Sinus Thrombosis N O Eddy Brooklyn —p 4
- Some Physiologic Factors in the Production of the Allergic State or Why Asthma E B Poole Greenville —p 9
- Outline of History of Orthopedic Surgery A T Moore Columbia —p 12
- Management of Crossed Eyes in Children R G Anderson Spartanburg —p 18

Southern Medical Journal, Birmingham, Ala

29 119 220 (Feb) 1936

- Hyaline Membranes on Posterior Surface of Cornea with Especial Reference to Congenital Types C A Clapp Baltimore —p 119
- Benign Nevus Malignant Melanoma Problem of Borderline Case R B Greenblatt E R Pund and G T Bernard Augusta Ga —p 122
- Concerning Colostomy F W Rankin Lexington Ky —p 130
- Concerning Stomachs That Are Upside Down D A Rhinehart Little Rock Ark —p 139
- Obstructions at Bladder Neck in Infants and Children J R Caulk St Louis —p 142
- Roentgen Radiation in Treatment of Malignant Disease A N Arneson St Louis —p 148
- Roentgenography of Larynx and Pharynx R P O'Bannon Fort Worth Texas —p 154
- Treatment of Lymphoid Hypertrophies and Infections of Pharynx and Nasopharynx by Irradiation W W Eagle and R J Reeves Durham N C —p 159
- Prostatic Malignancy as Revealed by the Resectoscope W F Scott R C McQuiddy and T Collins Birmingham Ala —p 163
- Effect of Morphine on Human Ureter Clinical Application V F Ockerblad and H E Carlson Kansas City Kan —p 166
- Roentgen Study of Mediastinal Tumors W R Brooksher Fort Smith Ark —p 169
- Investigations Concerning Hookworm Disease in Southern States with Suggestions for Continued Control W S Leathers and A E Keller Nashville Tenn —p 172
- Effect of Various Analgesics on the New Born M S Lewis Nashville Tenn —p 178
- Poliomyelitis Epidemic in North Carolina A S Root Raleigh N C —p 184
- Case Presenting Intra Ocular and Other Evidences of Increased Intra cranial Pressure Without Brain Tumor C L Lamar Birmingham, Ala —p 191
- Discussion of Meniere's Syndrome in Head Injuries and Myxedema J A Shield Richmond Va —p 193
- Recent Advances in Diagnosis and Treatment of Allergic Disease with Especial Reference to Glucose Tolerance and Metabolism H B Wilmer M M Miller and J T Beirwood Philadelphia —p 197
- Relation of Allergy to Gastro Enterology Marion T Davidson Birmingham Ala —p 202
- Comparison of the Kline and Noguchi Modification of Wassermann Test E B Ritchie San Antonio Texas —p 207
- Improved Technique for Catheterizing Male Bladder G Walker Baltimore —p 209
- Extreme Nitrogen Retention in Case of Carcinoma of Bladder W A Blount Laurel Miss —p 211
- Importance of an Organized Cancer Clinic Q U Newell St Louis —p 212

Tennessee State Medical Assn Journal, Nashville

28 487 530 (Dec) 1935

- Mutual Obligations of the Medical Profession and the Public N S Shofner Nashville—p 487
Heart Disease and Pregnancy W D Stryhorn Norris—p 492
Management of Occipitoposterior Position Report of Seven Hundred and Twenty Eight Cases M S Lewis Nashville—p 499
Influenza and the Nervous System S T Rucker Memphis—p 510

29 1 42 (Jan) 1936

- State Medicine H H Shoulders Nashville—p 1
An Address B C Smith Kingsport—p 13
Some Practical Suggestions on the Tuberculosis Problem W W Hubbard Nashville—p 16
Hyperinsulinism and Epilepsy C R Thomas Chattanooga—p 21
Results in X Ray Treatment of Certain Diseases of Eye W S Lawrence Memphis—p 28

Texas State Journal of Medicine, Fort Worth

31 545 602 (Jan) 1936

- Abscess of Larynx Report of Cases C P Schenck Fort Worth—p 549
Modern Indications for Therapeutic Abortion from the Neurologic Standpoint T H Harris Galveston—p 554
Cardiac Indications for Therapeutic Abortion W G Reddick Dallas—p 556
Modern Indications for Therapeutic Abortion in Nephritic Complications J Kopecky San Antonio—p 560
Modern Indications for Therapeutic Abortion in Pulmonary Complications W S Horn Fort Worth—p 563
Intestinal Obstruction in Pregnancy and Labor W E Massey Dallas—p 566
Benign Uterine Hemorrhage J K Smith Texarkana—p 569
Present Day Conception of Cleft Lip and Palate Surgery H L D Kirkham Houston—p 571
Clinical Studies on Action of Acetyl Beta Methylcholine Chloride (Mecholyl) E H Schwab W L Marr and R M Moore Galveston—p 574
The Age of Choice for Nonemergency Operations in Infancy and Childhood J W Duckett Dallas—p 578

Virginia Medical Monthly, Richmond

62 619 684 (Feb) 1936

- Treatment of Acute Respiratory Diseases F C Rinker Norfolk—p 619
Treatment of Acute Infections of Upper Urinary Tract J F Geisinger Richmond—p 622
Treatment of Toxemias of Pregnancy T J Williams University—p 626
A More Rational Treatment of the Insane H C Henry Petersburg—p 630
Endocrines and Personality J Kotz and H Douglas Washington D C—p 635
Chordomas Report of Case O Harnos and L A Palmer Norfolk—p 638
Through Fifty Years—1885 1935 R H Garthright Vinton—p 649
Spontaneous Fistulas of Larynx Case Report O C Jones Newport News—p 654
Sterility from the Standpoint of the Female P Rucker Richmond—p 656
Chronic Ulcerated Colitis C E Martin North Emporia—p 660
Etiology of Indigestion O T Amory Newport News—p 663
Emergency Minor Surgery S Leigh Jr Norfolk—p 667
Traumatic Cyanosis in the New Born W McMann Danville—p 670

Sterility from the Standpoint of the Female—Rucker states that 36 per cent of patients with primary sterility and 65 per cent of those with secondary sterility (primary, in which the patient has never conceived, and secondary, in which the patient has been pregnant at least once, even if it was only an abortion) became pregnant when treated for cervicitis. Posture and pessary treatment gave 16 per cent positive results in primary sterility and 64 per cent in secondary sterility. In the primary group 26 per cent of the patients with patent tubes and 48 per cent of the patients in the secondary group became pregnant soon after this test. Half of the patients in the primary group with partially closed tubes and 20 per cent of those in the secondary group became pregnant. Of the primary sterility patients with closed tubes 15 per cent and 33 per cent of the secondary patients became pregnant. All secondary sterility patients and 21 per cent of the primary sterility patients became pregnant on thyroid medication when such treatment was indicated either from the history or because of a minus metabolic rate. The primary group yields a total of 38 per cent of pregnant cases and the secondary group 52 per cent. It would seem then, that cases of secondary sterility are more amenable to treatment by ordinary gynecologic methods than the primary cases. Conversely, more of the cases of primary sterility have a deeper fundamental endocrine developmental or congenital basis.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Brain, London

58 427 516 (Dec) 1935

- Effect of Increased Intracranial Venous Pressure on Pressure of Cerebrospinal Fluid T H B Bedford—p 427
Vasodilatation and Vasoconstriction in Response to Warming and Cooling the Body Study in Patients with Hemiplegia V Uprus J B Gaylor D J Williams and E A Carmichael—p 448
Visomotor Responses in Hemiplegic Patients G Sturup B Bolton D J Williams and E A Carmichael—p 456
Myographic and Electromyographic Studies of Myasthenia Gravis D B Lindsley—p 470
*Peripheral Nerves in Cases of Subacute Combined Degeneration of Cord J G Greenfield and E A Carmichael—p 483
Subpial Resection of Cortex in Treatment of Jacksonian Epilepsy (Horsley Operation) with Observations on Areas 4 and 6 E Sachs—p 492

Peripheral Nerves and Subacute Combined Degeneration of Cord—Greenfield and Carmichael obtained peripheral nerves from cases of subacute combined degeneration. The myelin sheaths were stained by placing the nerves in a 1 per cent solution of osmic acid for from twenty-four to thirty-six hours immediately after they were removed from the body. The authors accept the great difference in measurements as well as in counts of myelin sheaths in the nerves of cases of subacute combined degeneration of the cord from those found in normal nerves as evidence that there is a true degeneration of the peripheral nerves in this disease. Except in the rapidly fatal case of subacute combined degeneration of the cord, there was very little abnormality in the contour of the myelin sheaths as seen in longitudinal sections, and nothing was ever seen suggesting wallerian degeneration. On the other hand, the preponderance of myelin sheaths of small size, as well as the poor staining of many of the myelin sheaths as compared with those in normal nerves, suggests that in subacute combined degeneration the nerve fibers suffer a general impoverishment of myelin. No doubt wallerian degeneration of individual fibers may occur in severe and rapidly progressive cases, but this must be exceptional. The appearance in the osmic acid sections might be interpreted as indicating edema of the fine nerve bundles. That edema of nerve does occur is known and it is the rule in many forms of polyneuritis. The presence of edema in the nerves in cases of subacute combined degeneration, if established, would therefore confirm rather than disprove the view that lesions of peripheral nerves are present in this disease. However, no definite evidence of edema was found in celloidin sections of the peripheral nerves in any case of this series, although the Weigert-Pal sections of these nerves gave evidence of considerable loss of myelin sheaths. Therefore it is not possible to explain these results on the basis of edema of the peripheral nerves.

Bristol Medico-Chirurgical Journal

52 191 262 (Winter) 1935

- The Twenty Fourth Long Fox Memorial Lecture Observations on Pain M Critchley—p 191
Results of Treatment of Mental Conditions G de M Rudolf—p 219

British Journal of Children's Diseases, London

32 241 326 (Oct Dec) 1935

- Neurologic Complications of Varicella Clinical and Epidemiologic Study E A Underwood—p 241
Analysis of Over Four Thousand Cases of Educational Deafness Studied During the Past Twenty Five Years M Yearsley—p 264
Diabetes Insipidus as Manifestation of General Miliary Tuberculosis J W Healy—p 275

British Medical Journal, London

2 1241 1288 (Dec 28) 1935

- Pathology of Osseous Tissue A M Drennan—p 1241
*Carcinoma of Colon H B Devine—p 1245
Diagnosis of Doubtful Cases of Scarlet Fever W A Brown and V D Allison—p 1249
Urinary Antiseptics Critical Survey J T Tait—p 1252
Light Treatment in Tuberculosis T G Millar—p 1254
*Splint for Broken Clavicles Which Preserves Function A K Henry—p 1255

Carcinoma of Colon—Devine bases his method of operating on the distal colon for carcinoma on the principle that if in an animal a segment of intestine is experimentally isolated and thus deprived of its function, its bacterial content will slowly

disappear. The proximal colon is disconnected completely and permanently from the distal colon, at the transverse colon if mobile enough or at the hepatic flexure. Completeness and permanence is ensured by inserting the cut ends of the intestine into small separate openings in the abdominal wall. No feces can pass into and infect the isolated segment. Time, then, becomes a factor in bringing about a 'debacterIALIZATION.' After this disconnection the distal colon is completely 'defunctioned.' Its contents can now be washed out, and, with the process of time and antiseptic preparations its bacterial contents become reduced to a minimum. In this defunctioned distal colon, which is quiescent, retracted and clean, it is possible to perform safely an orthodox sutured anastomosis. This is still possible even if the segments of intestine in question are incompletely peritonealized and even if there is great disparity in their caliber. In the case of carcinoma of the upper and lower parts of the sigmoid the requisite amount of intestine that should be removed with the carcinoma and the proper amount of pertaining mesenteric leaf, can be critically estimated and removed. The healing of the anastomosis under such favorable conditions is a most important surgical principle. The postoperative course after these operations is uneventful—an indication of the absence of even mild grades of local peritonitis, and therefore of any degree of infection. Aseptic anastomosis is rendered possible by the fact that it is not necessary for the lumen of "defunctioned" colon to be at once reconstituted. In the case of rectosigmoid growths (a two stage operation) the distal colon is defunctioned and prepared for three weeks or a month. The growth is then resected, and the divided end of the sigmoid is sutured to that of the rectum. In a three-stage operation the anastomosis is not made after resection, as in the first method, but the severed rectum is sutured, the peritoneum is closed over it and the divided end of the sigmoid is implanted in the wound. Six months later, when the rectal stump is firmly covered with peritoneum, when the distal colon and the rectum are almost free from infection and when the patient free from the toxic effects of the cancer, is greatly improved in general health the sigmoid is connected to the rectum by making in the following way a "telescopic" anastomosis. The distal colon is mobilized and drawn through an opening that is made in the stump of the now peritoneum covered rectum and fixed in this position. The closed rectal cavity is laid widely open by cutting this sphincter. The intestinal end may be drawn through the peritoneum-covered abdominal wall on to its surface or it may be drawn through the peritoneum-covered rectum into a rectal space which is wide open externally. By the time the rectosigmoid junction is complete the sphincter has healed in order to make the patient again continent, it only remains to reconnect the colonic segments. In closing the disconnecting anus the enterotome is used and the spur is clamped for forty-eight hours and then cut through by further pressure. Five or six days later procaine hydrochloride is injected around the intestinal ends, which are then dissected from the skin and muscle and with the small openings in the abdominal wall, closed. Closure is prompt, as a rule.

Splint for Broken Clavicles—For fracture of the clavicle, with the patient seated on a chair, Henry molds a plaster girdle to grip the iliac crests. An assistant meanwhile passes a loop of ordinary bandage under the axilla on the injured side, then, standing behind the patient on another chair, he uses this loop to pull the shoulder steadily backward, outward and up as high as possible. The plaster, after encasing the lower abdomen, is then brought to the axilla of the injured side and surrounds the shoulder and upper third of the arm in such a way as to maintain the reduction obtained by the loop of bandage. A short sleeve enclosing the arm makes an angle of about 40 degrees with the side of the chest and is wide enough to allow axial rotation of the limb. The opposite shoulder is left free. Children require a wide bay in the jacket to allow room for meals. As soon as the plaster has set, the patient has painless use of the hand, wrist and elbow on the injured side. The plaster is removed on the twenty-first day. The patient at once has free use of the ipsilateral shoulder except for vertical elevation of the arm, but this is soon recovered when the slight stiffness due to the plaster cast has gone—often within an hour. The function of the rest of the limb is normal. The patient requires no further treatment and can

resume hard work within a week. The author has treated five cases of complete fracture of the middle third of the clavicle in this way since November 1934. A hand's breadth, measured from the axilla, is the best length for the short sleeve. Provided the plaster is properly based on the pelvis and care is taken to keep the shoulder high when it is drawn back, correction of the deformity will be almost as good as that which is said to reward those who lie on sandbags for three weeks.

Edinburgh Medical Journal

43 1 60 (Jan) 1936

- Fever Therapy Its Rationale in Diseases of Nervous System
J Wagner Jauregg—p 1
Changing Conceptions of Disease W Langdon Brown—p 13
Studies in Method and Standardization of Blood Examination II Sedimentation Rate and Sedimentation Volume of Blood W F Harvey and T D Hamilton—p 29

Irish Journal of Medical Science, Dublin

No 120 669 716 (Dec) 1935

- Bone Grafting H F MacAuley—p 669
Role of Surgery in Treatment of Pulmonary Tuberculosis M P Burke—p 676
Blood Pressure and Aortic Aneurysms Applicability of Bernoulli's Theorem J Bell—p 685
Ramifications of Therapeutics J Sheil—p 695

Journal of Hygiene, London

35 449 564 (Dec) 1935

- Diphtheria Toxoid Reaction (Moloney) Test Its Applications and Significance E A Underwood—p 449
*Long Term Experiment with Rats on Human Dietary J B Orr W Thomson and R C Garra—p 476
Q Proteins and Nonspecific O Antigens of Cholera Vibrio P B White—p 498
Bacteriology of Bovine Streptococcus Mastitis F C Minnett—p 504
*Pseudo Schick Reaction and Intradermal Toxoid Test of Moloney Their Relationship and Significance M Mitman—p 512
Influence of Protein Content of Recovery Medium in Germicidal Tests Note J G Baumgartner and M D Wallace—p 534
Experimental Tubular Necrosis of Kidneys Accompanied by Liver Changes Due to Dioxin Poisoning S de Navasquez—p 540
Clotting of Plasma Through Staphylococci and Their Products H D Walston—p 549

Experiment with Rats on Human Dietary—For two and one-fourth years, Orr and his associates maintained a large colony of rats on a diet based on a dietary survey of a human population. Half of the rats were fed on the human survey diet or this diet with a small increase in milk, the other half on the same diet supplemented with additional milk and green food. Four generations of animals were reared from the same stock. The rats on the human diet with additional milk and green food were healthy in all respects so far as can be judged from rats on a stock diet and from the data of other workers. On the other hand in spite of an exactly similar environment and heredity, the animals without additional milk and green food showed (1) a slightly impaired reproductive capacity, (2) a markedly increased death rate due to increased susceptibility to an infection to which all rats were equally exposed, (3) a definitely slower rate of growth, (4) a lower hemoglobin content in the blood and (5) a clinically poorer condition as judged by behavior and state of the coat. The results are applicable to some extent to human beings. The authors suggest that a large section of the human population is still far from the optimal state of nutrition and that much could be done, by means of improved food supply, to raise the resistance to infection and to improve the physique of human beings.

Pseudo Schick Reaction and Toxoid Test of Moloney—Mitman observed 212 new members of the staff of the North Eastern Fever Hospital who were Schick and Moloney tested. The Schick-positive reactors were immunized with formal toxoid and post-Schick and Moloney tests were performed. He discerned that the intradermal toxoid test of Moloney or Zoeller corresponds exactly with the pseudo response in the Schick test. The pseudo response is as efficient as the Moloney response for detecting possible reactors to immunizing doses of toxoid and is a more accurate control of the Schick test. The Moloney test therefore appears redundant. A positive Moloney or pseudo reaction accurately indicates those who will react to immunization, but a negative Moloney or pseudo reaction is no guaranty that the subject will not react. The Moloney or pseudo reaction is evidence of bacterial hypersensitivity.

to specified products of the body of the diphtheria bacillus. Zoeller's theory that hypersensitiveness is a half-way stage between susceptibility and immunity is incorrect. Reactions usually, but not invariably, develop conjointly with immunity. Because of this parallelism, tests of hypersensitiveness give information as to the state of immunity. Bacterial hypersensitiveness bears a close relationship to antitoxic immunity. Immunity to diphtheria is something more than antitoxic immunity. If bacterial immunity exists, bacterial hypersensitiveness appears to have some place in immunity.

Lancet, London

2 1449 1498 (Dec 28) 1935

- Undulant Fever with Especial Reference to Its Clinical Aspects in England and Wales W Dalrymple Chalmers—p 1449
Intranatal and Neonatal Death Review of Ninety Nine Consecutive Cases J M Smellie—p 1453
Study of Hemolytic Streptococcal Fibrinolysis in Chronic Arthritis Rheumatic Fever and Scarlet Fever C H Stuart-Harris—p 1456
Rheumatoid Arthritis Believed to Be of Tuberculous Origin Report of Two Cases W S C Copeman and R D Clay—p 1460

Hemolytic Streptococcus Fibrinolysis in Arthritis and Scarlet Fever—Stuart-Harris showed that the presence of resistance to fibrinolysis was related to hemolytic streptococcus infection, particularly if the resistance was of maximal degree, also that in streptococcal tonsillitis and pharyngitis resistance to fibrinolysis, if it occurred, was found in the second or third week after the onset of the infection. He has extended this work to include cases of chronic arthritis, rheumatic fever and scarlet fever. He has found that the blood of patients with rheumatoid arthritis is susceptible to streptococcal fibrinolysis. The blood of patients with rheumatic fever is resistant to fibrinolysis, particularly during the active stage of the disorder or after intercurrent streptococcal infection during convalescence from activity. The blood of patients with scarlet fever is resistant to fibrinolysis within three weeks from the onset in a minority of individuals and resistant in a majority of those patients with disorders of the heart or joints. Hemolytic streptococcus infection is considered to be related to rheumatic fever but not to rheumatoid arthritis. Hemolytic streptococcus infection of the respiratory tract in a rheumatic subject probably differs from a similar infection in a nonrheumatic subject.

Rheumatoid Arthritis—Copeman and Clay cite two cases of rheumatoid arthritis that suggested a tuberculous etiology and state that after full examination they decided to try the effect of a minute injection of tuberculin. The results, taken in conjunction with the other investigations reported, suggest that other cases of rheumatoid arthritis might prove to be of tuberculous origin if they were studied from this point of view. The two women responded to the injection of a minute dose of tuberculin by a general pyrexial reaction. A focal reaction also occurred in all the affected joints and in one case lasted for ten days. In addition to these reactions in the first case an area of heretofore undetected infiltration of the lung was rendered evident by the appearance of physical signs confirmed roentgenologically, while in the other case a cutaneous tubercle developed on the leg shortly after the injection. This ultimately healed. Most of the pathologic tests usually employed for the diagnosis of tuberculosis were positive in both cases. The authors believe that an unsuspected latent tuberculous focus was present in each case and was activated temporarily by the injection of tuberculin.

Medical Journal of Australia, Sydney

2 833 862 (Dec 21) 1935

- An Address G Brown—p 843
Ether Is Not Dead Z Mennell—p 837
Biochemical Aspects of Anesthesia I Maxwell—p 841
Sources and Pharmacology of Impurities in Anesthetics B L Stanton—p 845
Uses of Carbon Dioxide in Anesthesia E C Black—p 849
Anesthesia in America G Troup—p 857
Choice of Anesthesia in Some Surgical Conditions G L Lillies—p 863
Anesthetic Failures An Anonymous Contributor—p 866

2 885 908 (Dec 28) 1935

- Some Allergic Disorders D L Barlow—p 885
Clinical Study of Nicturition E G Robert—p 890
Problems of Junior Resident Medical Officers I I Brodsky—p 895

Medical Press and Circular, London

191 533 554 (Dec 18) 1935

- *Angina Pectoris C B Perry—p 540
Some Present Day Public Health Problems J A Harrison—p 543
Svavgers in Myths and Dreams F P Weber—p 546
Bacteriology of the Atmosphere R C McLean—p 547

Angina Pectoris—Perry points out that three characteristics serve to differentiate anginal pain: the squeezing, constricting nature of the pain, its site and the relationship of the pain to physical or mental activity. A fourth feature, which is not constant, is the psychologic component of the symptoms, the sense of impending death. This feature may be described with pain other than anginal, for instance with the pain of gallbladder disease. The two conditions likely to be confused with angina are coronary thrombosis and the left inframammary pain or 'heartache' so frequently seen in debilitated anxious women. In coronary thrombosis the pain is identical in character, but if anything more severe than that of angina pectoris, and the patient may give a history of previous attacks of typical angina. Left inframammary pain affects women far more frequently than men and is typically situated under the left breast, or, as the patient usually says, "over the heart." It occurs characteristically, not during exertion but when the patient is resting at the end of a long and tiring day and it lasts for hours, long after the exertion has ceased. This symptom may occur in patients with normal or pathologic hearts but in no way affects the prognosis and must be carefully distinguished from angina pectoris, with which it has no connection. Angina pectoris occurs as a symptom in various diseases and the main pathologic processes with which it may be found are coronary sclerosis and atheroma, hyperpiesia, syphilitic aortitis, aortic incompetence due to rheumatic heart disease, syphilitic aortitis or bacterial endocarditis, severe anemias, particularly pernicious anemia and occasionally hyperthyroidism or paroxysmal tachycardia. In attempting to formulate a prognosis, the first thing to consider is the underlying pathologic condition. If the angina occurs as a symptom of cardiovascular syphilis, this in itself gives an average expectation of life of about five years. If the cause is a severe anemia that will respond to treatment, the outlook is correspondingly bright. In the majority of cases, however, no abnormal physical signs are found in the cardiovascular system with the possible exception of abnormalities in the electrocardiogram. Factors indicating a poor outlook are rapid progress in the frequency of the attacks and diminution in the amount of effort required to induce the pain. Such a state of affairs obviously indicates a rapidly progressive lesion. Another factor is the degree to which the patient can and will consent to limit his activities and attempt to live within his cardiac reserve. A poor prognosis is indicated by the discovery of any evidence of ventricular failure and also by the occurrence of attacks of paroxysmal nocturnal dyspnea (cardiac asthma). The treatment of the usual coronary form of angina consists in the relief and the prevention of attacks. Relief in the majority of cases rapidly follows cessation of the activity that induced the attack. This relief may be hastened by the administration of alcohol or the inhalation of amyl nitrite. If the pain continues despite rest and nitrites, it suggests an attack of coronary thrombosis, and it is undesirable to repeat a dose of amyl nitrite since in coronary thrombosis the essential factor is that the blood pressure should be kept as high as possible in order to encourage the opening up of anastomotic channels.

Japanese Journal of Experimental Medicine, Tokyo

13 751 828 (Dec 20) 1935

- Studies on Bird Trematodes V Intermediate Host and a New Species of Bird Trematodes N Ishii and F Matsuoka—p 751
Ultrafiltration Experiments on Filtrable Agent of Rous Chicken Sarcoma H Yot and W Nakahara—p 757
Changes in Cells of Sweat Gland of Horses During Sweat Secretion S Ezima and K Muto—p 767
Studies on Etiology of Scarlet Fever A Imamura H Ono Z Horai A Fujii and H Umetani—p 771
Growth of Tubercle Bacilli in Lymph Fluid A Imamura and N Naito—p 795
Dehydrogenation of Bacteria W Nakagome—p 797

Archives des Maladies de l'Appareil Digestif, Paris

25 1009 1152 (Dec) 1935

- Ulcer of Pyloric Canal R A Gutmann and R Hoffmann—p 1009
 Postinsulin Glycemia in Hepatic Insufficiency F Fernandez and J M Clavera—p 1038
 *Oxidizing Ferments of Raw Vegetables and Digestion O P Matvieff—p 1049
 Investigations on Pathogenesis of Gastroduodenal Ulcer P Docq—p 1057
 Humoral and Tissue Syndrome in Course of High Intestinal Fistulas J Bottin—p 1070

Oxidizing Ferments and Digestion—Matvieff investigated the quantities of oxydase, peroxydase and catalase contained in various raw vegetables and in various stages of digestion. The oxydase was determined by using 1 cc of a mixture consisting of 1 per cent naphthol, 0.75 per cent para phenylenediamine and 17 per cent sodium carbonate. This is dissolved in enough distilled water to make 10 cc and the substances are studied by soaking them with this solution. In the presence of oxydase the colors pass from violet to indigo blue. Peroxydase was determined by the Guici method. Catalase was found by adding hydrogen peroxide to the substance to be tested and obtaining water and oxygen in its presence. From the results of these studies the author concluded that the vegetable ferments play an important part in the economy of the organism. The presence of these ferments in the entire length of the intestinal tract must be important, though how is not yet clear. No action of these ferments on the pancreas could be demonstrated. These ferments are all heat labile, and it is therefore likely that the introduction of raw vegetables in the dietary may be a necessary part of the exchange metabolism.

Archives de Médecine des Enfants, Paris

38 709 804 (Dec) 1935

- *Triangular Images of Thoracic Bases in Children R Debre and M Lamy—p 709
 Complex Dystrophic State of Childhood (Obesity Dwarfism Multiple Osseous Dystrophies) H Grenet and P Isaac Georges—p 725
 Sweetened Condensed Milk in Feeding of Well and Sick Nurlings J Taillens—p 737

Triangular Images of Thoracic Bases—Debre and Lamy discuss the triangular images that are sometimes seen at the base of the lung in roentgenograms of children. The most important causes are bronchial dilatations, pulmonary atelectasis, whooping cough and localized pneumonia. The conditions are frequently difficult to differentiate and the formal diagnosis often involves examination with iodized poppy-seed oil and sometimes bronchoscopic exploration.

Presse Medicale, Paris

43 2065 2096 (Dec 21) 1935

- Roentgenologic Appearance of Initial Lesion of Pulmonary Tuberculosis R Debre M Lelong and M Mignon—p 2065
 Anatomoroentgenologic Study of Cardiovascular System C Laubry P Cottotot D Rottier and R Heim de Balsac—p 2071
 Primary Infection of Young Adult Courcoux and Albert—p 2076
 Roentgenologic Physiology of Ileocec Valve M Chiray and A Bosquet—p 2081
 Roentgen Diagnosis of Calcifications of Abdominal Aorta and Its Branches R Ledoux Lebard J Garcia Calderon and G Ledoux Lebard—p 2084
 New Contributions to Physiopathologic Study of Cerebral Hemorrhages D Paulian and I V Bistriceano—p 2085
 Endemic Hypothyroidism S Vomela—p 2090
 *Treatment of Abscess and Gangrene of Lung by Intravenous Injections of Sodium Benzoate L Goldkorn—p 2094

Treatment of Lung Abscess and Gangrene by Sodium Benzoate—Immediately after the intravenous administration of a sufficient dose of sodium benzoate, a curious phenomenon is noticed according to Goldkorn. The patients notice an odor both sudden and agreeable. They also have a feeling of heat in the chest and head. This proves that the sodium benzoate has a definite affinity for the pulmonary tissue. Its elimination by the air passages is a symptom of saturation. As a result of 2200 intravenous injections he feels that the optimum drying and antiseptic dose corresponds exactly to the dose that produces the aforementioned symptoms. The effect of any treatment on pulmonary abscess is difficult to evaluate and consequently only chronic and acute abscesses with progressive pulmonary destruction were used in evaluating the results of treatment. Two cases of chronic abscess and one of large, acute destructive abscess were treated in this manner and are

reported in detail. In five cases of bronchiectasis also a diminution in the quantity of sputum was observed. The smallest dose for pulmonary abscess is 20 cc of a 20 per cent solution each day. When symptoms of saturation are not produced by this dose, larger doses are indicated. The technic of injection is important. It must be made slowly and 20 cc should take five minutes. The purity of the preparation, which should be made fresh each time, is highly important. Daily injections are given. In the acute cases fifteen injections are usually enough, but in the chronic cases about thirty are generally necessary. They are continued until the clinical and roentgenologic signs have entirely disappeared.

Schweizerische medizinische Wochenschrift, Basel

66 109 132 (Feb 1) 1936

- *Casuistic Contributions to Secondary Infiltrates in Course of Intrathoracic Tuberculosis in Children F Lichtenhahn—p 109
 Rare Forms of Tuberculosis of Nurlings J R Dreyfus—p 114
 Roentgenoscopy and Roentgenography of Thorax in Diagnosis of Pulmonary Tuberculosis A Wernli Haessig—p 116
 New Methods in Specific Therapy of Tuberculosis A I Jarotzky—p 119
 *Fatal Poisoning by Gold Preparations Hedwig Fatzer—p 120
 Patients with Pulmonary Disease at Writing Desk J Kollarits—p 121

Secondary Tuberculous Infiltrates in Children—Lichtenhahn points out that in the most frequent intrathoracic tuberculosis of children, namely, tuberculosis of the hilus glands, pulmonary infiltrations often develop, which cause rather acute symptoms. These infiltrations, adjacent to the diseased glands, are designated perifocal secondary infiltrations or epituberculous infiltrations. They often develop with great rapidity and may involve an entire pulmonary lobe. If they develop with sudden fever in children who had been apparently healthy before, they occasionally are mistaken for simple pneumonia, whereas, when it is known that hilus tuberculosis existed, they may be considered an acute and threatening dissemination of the tuberculous process. Although the author does not deny that tuberculosis of the hilus may occasionally take an unfavorable course, he says that roentgenoscopic control of the pneumonia-like infiltrations has revealed that they are usually harmless and disappear rapidly by complete resorption of the process, or by leaving behind traces of fibrous involution. The glandular focus, which is responsible for the secondary infiltration, often does not become visible until after the veil of exudation has been lifted by resorption. Thus the roentgenogram does not always disclose the tuberculous or epituberculous nature of the infiltrate, and other methods will be necessary for a differentiation from pneumonic or other infiltrates. The author describes the clinical aspects of several cases of temporary pulmonary infiltrates. One case, which at first was thought to be a secondary tuberculous infiltrate, later was found to be a pneumonic infiltrate, caused by a postpneumonic pulmonary abscess. The author discusses the elimination of bacilli and the problem of contagion in children with epituberculous infiltrates. He points out that formerly hilus tuberculosis was considered "closed", that is, the elimination of tubercle bacilli was denied. Now, however, it is conceded that tubercle bacilli may be excreted in all phases of intrathoracic tuberculosis. In children with tuberculosis of the hilus region the direct demonstration of tubercle bacilli in the sputum was usually impossible, but animal tests with pharyngeal mucus, gastric contents or feces disclosed tubercle bacilli in 55 per cent of the cases with infiltrations. From this the author concludes that the possibility of the elimination of bacilli and consequently a certain infectiousness should not be disregarded in cases of hilus tuberculosis with a tendency to successive febrile exacerbations.

Fatal Poisoning by Gold Preparations—Fatzer says that since the introduction of gold preparations, particularly in the treatment of pulmonary tuberculosis and of chronic rheumatism, undesirable complications (some with fatal outcome) have been reported repeatedly. After mentioning the symptoms of these complications the author reports two fatal cases of gold poisoning. She reaches the conclusion that toxic symptoms may develop after the use of any gold preparation and emphasizes the necessity of watching for the appearance of such symptoms in the course of gold therapy. At the slightest sign of a toxic effect the gold therapy should be interrupted. Typical agranulocytosis (in Schultz's meaning of that term) is rare after gold

therapy The toxic manifestations usually involve the entire hematopoietic system However, death may be caused also without hematic changes It may result from hepatic impairment, enteritis or pulmonary abscess The author points out that the slow infiltrative pulmonary processes that have a tendency to abscess formation are especially frequent after gold therapy Some persons have a predisposition to gold poisoning This predisposition is more frequent in women than in men and in rheumatic than in tuberculous patients

Policlínico, Rome

43 133 184 (Jan 27) 1936 Practical Section

- *Test of Produced Galactosuria in Estimation of Liver Functions in Lobar Pneumonia G Canali—p 133
Aneurysm of Popliteal Artery Late Result of Wound Suffered in War Case E Dotti—p 147

Test of Galactosuria for Estimation of Functions of Liver in Lobar Pneumonia—With the test of produced galactosuria, Canali determined the behavior of the curves of the blood sugar and of bilirubinemia in lobar pneumonia He also made studies on the role of liver involvement in the pathogenesis of jaundice complicating pneumonia The test gave positive results in seven of a group of eleven patients Bilirubinemia existed in six patients of the seven and returned to normal after the pneumonic crisis The only patient without bilirubinemia in this group was suffering from pneumonia of a migratory type Three of the four patients in whom the test gave negative results had simultaneously normal figures of bile pigments in the blood They were young people in excellent health who had suffered neither from infectious diseases nor from toxic conditions and in whom the liver was probably in the best condition to stand the pneumococcal infection The remaining patient had intense jaundice The negative result of the test in this case was explained by the lack of absorption of galactose by the liver owing to the grave disturbances of the portal and general circulations inherent in this condition In this case the curves of galactosemia did not change after galactose was administered to the patient The author concludes that the results of the test prove that the liver is greatly involved during the course of pneumonia and that the involvement of this organ is the cause of pneumonic jaundice

Prensa Medica Argentina, Buenos Aires

23 227 290 (Jan 22) 1936

- Radiations Emitted by Cholesterol Previously Irradiated with Sun or Ultraviolet Rays A H Roffo and A E Roffo Jr—p 227
*Adrenals in Amebiasis C P Waldorp and J Reforzo Membrives—p 247
Metabolism of Sexual Hormones in Women and Practical Value of Quantitative Determination of Hormones E Fels—p 250
Tuberculous Infiltration J Viale and J B Ticinese—p 259
Nervous Accidents of Spinal Anesthesia Hemiplegia N Arenas and O Blanchard—p 264
Secondary Perifocal Tuberculous Infiltration with Hemoptysis Case M Bilezker and R Slemenson—p 276

The Adrenals in Amebiasis—Waldorp and Reforzo Membrives state that Addison's disease is often associated with hypoglobulia Addison described the disease as idiopathic anemia The presence of anemia however, is not constant in all cases of the disease, but it depends on the intensity of the adrenal disturbances or the presence of complications Amebiasis, especially the acute form, frequently causes grave and sometimes fatal alterations in the adrenals The type of adrenal insufficiency due to amebic hepatitis manifests itself by the appearance of a typical Addison syndrome associated with pigmentary hepatitis It seems to the authors that in these cases the adrenals react to the parasitic infestation of the liver by a mechanism of sensitization because of their relations to the liver in the functions of the metabolism of adrenal and hepatic pigments The authors report two cases of adrenal insufficiency of amebic origin with typical addisonian syndrome They call attention to the frequency with which a low arterial pressure and the presence of pernicious-like anemia are observed in patients with amebiasis They believe that these symptoms are due to adrenal insufficiency through the same mechanism that produces them in Addison's disease Adrenal insufficiency is also the cause of the changes in the blood picture as well as of the tendency of the temperature in those patients to remain below normal in spite of the presence of hepatitis and pernicious-like anemia

Semana Medica, Buenos Aires

43 161 240 (Jan 16) 1936 Partial Index

- *Diagnosis of Osseous Hydatidosis O Ivanisovich and A S Introzzi—p 161
Organic Hysterical Sensorial Sensitive Hemanesthesia Following Spinal Anesthesia Case J J Spangenberg and C Rossi Belgrano—p 166
Surgical Treatment and Postoperative Medical Treatment of Biliary Lithiasis D del Valle and L S Garre—p 169
Membranous Dysmenorrhea Case A J Risoir—p 177
Semeiology and Pharmacology of Argyll Robertson Pupil in Dementia Paralytica R Orlando and S Chichilnisky—p 213
Nupercaine Local Anesthesia in Surgery of Upper Part of Abdomen L Feldman—p 219

Diagnosis of Echinococcosis of the Bones—Ivanisovich and Introzzi wonder whether a diagnosis of osseous echinococcosis can be made early in the evolution of the infestation They report the case of a man, aged 55 in whom a tumor developed at the knee two years after occurrence of trauma The roentgenograms showed a deformed knee and the presence of round shadows A diagnosis of myeloplasmas was made and a conservative operation, with fixation of the knee in extension, was advised At the beginning of the operation the surgeon found that it was a case of echinococcosis involving the femur, the tibia and the articular soft parts Amputation was performed The authors emphasize the importance of a biopsy which in their case would have clarified the diagnosis before the operation They conclude that echinococcosis of the bones has neither clinical nor roentgen pathognomonic characteristics except late in the evolution of the infestation The increase of the local temperature (Estlander's sign) does not prove the absence of echinococcosis Echinococcosis makes its appearance in the roentgenograms at the third period of evolution of the infestation that is when the macrovesicular hydatid geodes have already caused erosion and cavitation of the bones Microvesicular hydatids have the same coefficient of absorption of roentgen rays as that of the marrow bone This fact explains the reason why large areas of microvesicular infiltration fail to appear in the roentgenograms Roentgen round shadows indicate the presence of hydatid geodes They make their appearance in the roentgenograms at a time when the macroscopic lesions are still latent, but, even so the microvesicular infiltration is already extensive by this time That is why the authors point out the importance of devising new technics for roentgen examination of the bones to detect early microvesicular infiltration The conclusions of the authors have been verified by the observation of further cases, one of which is briefly reported

Archiv fur klinische Chirurgie, Berlin

184 375 548 (Jan 22) 1936 Partial Index

- *Significance of Inflammatory Reaction in Carcinoma Patients K Ebhardt and G Weinholtz—p 375
Action of Electric Current on Intravascular Thrombi in Animal Experiment E Krass—p 383
*Clinical Aspects and Pathologic Histology of Buerger's Form of Thrombo Angitis Obliterans I Lindenbaum and L Kapitza—p 413
Dehydrating Action of Hypertonic Solutions in Normal and in Experimentally Increased Cerebral Pressure M Or—p 436
Treatment of Old Perilunar Luxation F Prochnow—p 477
Permanent Results of Resection of Prostate H A Dege—p 484

Significance of Inflammatory Reaction in Carcinoma Patients—Ebhardt and Weinholtz report their studies on Kauffmann's inflammatory reaction in patients with carcinoma They found that the patient even in his last stages does not have as first assumed a reduced reaction capacity, but that his defense powers are especially mobilized and permit the development of an intense reaction If the blood elements fail to respond the mesenchymal cells may appear in the exudate Histologic examination reveals in these cases a considerable adventitious increase in round cells and histiocytes The frequently severe eosinophilia is a form of allergic reaction in the carcinoma patient In trying to evaluate the significance of these factors with regard to the organism's defense against carcinoma the authors point out that there is a zone of cellular reaction in which blood and cellular elements participate in various degrees The reaction of the leukocytes usually stands in a certain relationship to the manifestations of disintegration particularly to the superficial ulcerations The degree of mesenchymal reaction is extraordinarily changeable it may be rather high in mammary carcinomas, it is usually much lower in the superficial cancers of the mucous membrane and it may be considerable in the carcinomas of the skin which consists

of pavement epithelium. In the latter type the eosinophilia of the tissues plays a part. These processes have been regarded as a type of defense against the carcinoma, but the authors' investigations seem to indicate that the functioning of the defense powers of the tissues does not prevent the progressive development of the carcinoma and that a considerable portion of the reticulo endothelial system may have a normal or a supernormal reaction capacity while the organism succumbs to the further spread of the tumors. During this time of vigorous cellular reactions cachexia advances, the circulation declines and the patient dies as the result of this decline. Thus the process is practically the same as in many (not all) severe acute suppurating infections. Kauffmann's inflammatory reaction does not have the hoped for prognostic significance and the authors point out that the therapy of carcinoma cannot expect much aid from a modification of the reticulo-endothelial system.

Buerger's Form of Thrombo-Angitis Obliterans—Lindenbaum and Kapitzka show that Buerger's disease is a special form of thrombo angitis that is accompanied by a wandering phlebitis. In many cases this wandering phlebitis appears long before the arteries become involved. The intensity and the distribution of the venous process correspond to the severe changes in the arteries. The authors differentiate three stages of the disease process: (1) migrating phlebitis without or with only slight symptoms on the part of the arteries, (2) migrating phlebitis with noticeable arterial symptoms and (3) migrating phlebitis with progressive arterial thrombosis. The so-called obscure forms of migrating phlebitis without arterial symptoms must be regarded as the first stage of the disease. From the pathologic histologic aspect the venous process is a formation of thrombi. During the first phase there appears a new thrombus with inflammatory changes in the vascular wall, disintegration of the muscle fibers in the edematous perivascular cell tissue and formation of granuloma. During the second phase there is organization of the thrombus without granuloma formation which at first results in the complete obliteration of the vascular lumen and later leads to the formation of a dilated lumen of a type like a cavernous angioma. With regard to the etiology, the authors say that the hypothesis which assumes an allergic origin deserves attention because it is corroborated by the morphologic picture. They consider lumbar sympathectomy the best method of treatment for wandering phlebitis with thrombo angitis. The sympathectomy should be done during the second stage of the disease. If done at the right time it usually arrests the phlebitic process. The prognosis is extremely difficult in Buerger's disease, for there is always the possibility of a sudden outbreak of the thrombo-angitis with transition into gangrene.

Beitrage zur Klinik der Tuberkulose, Berlin

87 339 422 (Jan 22) 1936 Partial Index

- *Life Duration of Tubercle Bacilli in Tuberculous Sputum Under Influence of Sunlight and Sun Rays A Zink—p 339
- Statistics on Concurrence of Carcinoma and Tuberculosis L Findeisen—p 364
- Distribution of Gold in Organism of Tuberculous Patients After Gold Therapy W Gerlach—p 370
- Free Fibrin Bodies in Pneumothorax Cavity L Funstein—p 374
- Value of Percussion in Diagnosis of Inflammatory and Destructive Diseases of Lungs A Winkler—p 377
- *Movements of Thorax in Unilateral Pneumothorax Anita Bock—p 416

Life Duration of Tubercle Bacilli in Sputum Exposed to Sun—Zink made studies on highly infectious sputums that had been expectorated on the street and thus were exposed to sunlight. He found that tubercle bacilli that were capable of growth disappeared at the earliest after two hours and at the latest after five hours. Cultures that were made after four hours generally proved negative. Cooling and experiments at higher altitudes and under the ultraviolet lamp demonstrated that the bactericidal power of sunlight is chiefly due to its ultraviolet components. It was observed too that heat promotes the bactericidal effect. The author stresses that radiation in the high mountains owing to its greater intensity and its greater content in ultraviolet and short wave rays, has an especially great bactericidal power.

Movements of Thorax in Unilateral Pneumothorax—Bock points out that the therapeutic effect of pneumothorax is generally ascribed to collapse and immobilization of the lung.

Most authorities aim particularly at immobilization. However, it has also been pointed out that it is erroneous to identify collapse and immobilization, the two being not at all synonymous. A collapsed lung is not always immobilized and an immobilized lung is not necessarily collapsed. Pneumothorax treatment may produce considerable collapse and yet not effect immobilization. According to Schnippenkotter immobilization is present only in cases in which the ventilation of the lung is reached. Since a pneumothorax lung is always under the influence of the respiratory pressure fluctuations, immobilization is hardly possible. In unilateral pneumothorax there obtains as a rule only a smaller volume of the lung. Immobilization in unilateral pneumothorax would require either a limitation of the thoracic movements by the pneumothorax or, if the respiratory movements remain unchanged, the mediastinum would have to make respiratory movements. The author studied the thoracic movements of patients with pneumothorax by means of the method devised by Anthony and Hansen. These studies revealed that a unilateral pneumothorax influences the movements of the thoracic wall not at all or only slightly. Limitation of these movements was observed in only a few of the patients. However, it is possible that the lung is nevertheless immobilized as the result of the drawing of the mediastinum toward the healthy side during inspiration. It is extremely difficult to estimate the extent of the mobility of the mediastinum. The author believes that unilateral pneumothorax as a rule does not immobilize the entire collapsed lung, and she says that other observers, particularly Schnippenkotter, made a similar observation, the latter author ascribing the therapeutic effect of pneumothorax chiefly to collapse and not to immobilization. Bock thinks that, although immobilization of the entire pneumothorax lung is not likely, some parts of it may nevertheless become immobilized.

Deutsche medizinische Wochenschrift, Leipzig

62 169 208 (Jan 31) 1936 Partial Index

- Diagnosis of Heredity of Congenital Physical Defects M Lange—p 169
- Depth Action of Short Waves E Raab—p 177
- *Efficiency Without Drinking of Coffee in Relation to Efficiency After Consumption of Coffee With and Without Caffeine G Voigt—p 179
- Endarteritis Obliterans of Mesenteric Arteries C Krauspe—p 179
- Physiology and Pathology of Stomach in Kymogram H Cramer and J Pinke—p 180
- Case of Unusually Severe Urticaria and Its Treatment P Kallos—p 181

Influence of Coffee on Efficiency—Voigt studied the effect of ordinary and of decaffeinated coffee on the efficiency of soldiers whose service consisted largely in measuring distances from moving objects. The tests were made on ten men and covered a period of eight weeks. The various types of coffee were always given for five days and, in order to differentiate exactly the effects, two coffee-free days were intercalated between the five day periods. The efficiency that existed when no coffee was taken served as a basis of comparison for the efficiency under the influence of ordinary and of decaffeinated coffee. It was found that the drinking of ordinary coffee impaired the efficiency by 23 per cent, whereas the drinking of decaffeinated coffee either did not influence the efficiency or improved it somewhat.

Medizinische Klinik, Berlin

32 73 104 (Jan 17) 1936 Partial Index

- Modern Therapy of Addison's Disease S Thaddea—p 76
- *Therapy with Hormones of Female Gonads H O Neumann—p 79
- *Genesis and Therapy of Extrasystoles J Pal—p 84
- *Peculiar Disorders Resulting from Pulmonary Edema in Renal Insufficiency R Klima and H Rosegger—p 85

Therapy with Hormones of Female Gonads—Neumann shows that, in spite of the great advances in the experimental research on the sex hormones and in spite of the accomplishments of the chemists in preparing hormone extracts, the therapeutic utilization of these active substances is still rather limited. In view of the fact that the genital function is an extremely complicated interaction of many factors, which as yet is only partly understood, the author thinks that it cannot be expected that the therapeutic results will be perfect, the more so since many psychic factors also play a part. It is often extremely difficult to determine which particular factor has disrupted the interaction. Sometimes a treatment is surprisingly successful,

while at other times it fails. The author emphasizes that one should not overlook that the hormones of the gonads influence the entire organism and that the intensity of this action cannot be foretold.

Genesis and Therapy of Extrasystoles—Pal states that the genesis of extrasystole is not uniform, but that toxic, nervous, psychic and other factors may play a part. He pays especial attention to the extrasystoles that occur intermittently in persons without heart disease. After calling attention to his earlier studies on the detrimental effects of an elevated diaphragm on a diseased heart, particularly those caused by gastric tension resulting from pneumatosis and to studies on the significance of the inflated stomach in angina pectoris and on the incidence of extrasystoles in pneumatosis, he points out that pneumatosis is usually caused by insufficiency of the cardia by the aspiration of air into the stomach and by conditions of nervous excitation. The persons in whom the author made his observations were mostly healthy. He examined most of them after the noon meal, that is, at a time when the extrasystoles were most frequent. It is necessary to convince these patients that the annoying symptoms are of no particular importance in that they are caused by pneumatosis. The author was able to demonstrate this readily after he had found that, particularly in men, the inflated stomach can be deflated by an eructation while the patient is lying on his left side. In women without heart disease extrasystoles are rarer than in men. However, the author does not imply that an elevation of the diaphragm by an inflation of the dome of the stomach is always present in these extrasystoles for he points out that the elevation of the diaphragm may be produced also by the intestine. He observed an inflation of the transverse colon particularly in women with the so-called spastic type of constipation. The extrasystoles occurring in these women could be counteracted by overcoming the intestinal disorder. To be sure the appearance of the extrasystoles is not entirely explained by the elevation of the diaphragm, but the heart also plays a part. Observations in the course of postural changes, which involved changes in the position of the heart but not of the diaphragm, and experiments on dogs indicated that mechanical irritations of the pericardium, which are produced by the abdominal viscera are the cause of the described extrasystoles. In discussing the treatment of these extrasystoles, the author calls attention to formerly suggested measures regarding the prevention and treatment of pneumatosis and heartburn and also stresses the importance of the prompt evacuation of the stomach and of the intestine. Medicaments for the heart are unnecessary in patients without heart disease.

Peculiar Forms of Pulmonary Edema in Course of Severe Renal Disorders—Klima and Rosegger report the clinical histories of three patients and state that among eighty patients with chronic nephritis, nephrosclerosis and uremia they found twenty cases in which roentgenoscopy disclosed pulmonary foci that disappeared in response to renal and cardiac treatment. The majority of these patients had temporary, usually nocturnal, attacks of dyspnea and nearly all had increased blood pressure, an abnormally high rest nitrogen and nephritic renal changes. On the basis of the clinical aspects and of the physical examination, inflammatory pulmonary foci could be excluded; however the roentgenologic differentiation from inflammatory processes of the lung was considerably more difficult and the roentgenologic diagnosis often was given as lobular pneumonic foci of infiltration. The authors mention the following aspects as the factors that differentiate these nephrogenic pulmonary edemas from the cardiac type: 1. Attacks of dyspnea which frequently occur during the night and may be accompanied by coughing and by the appearance of foam or pink sputum. 2. Hemoptysis which generally is not severe. 3. Various areas of dullness, which however, readily escape detection and crepitation. The latter signs are not restricted to the lower part of the lung and they may even be entirely missing in the lower part. 4. Transience of these symptoms. The author thinks that the localization of the edema, namely, the fact that it leaves the lower portion of the lung free, is the factor which militates most clearly against a cardiac origin. He reviews the roentgenologic differences between cardiac stasis of the lung and the nephrogenic pulmonary edemas, which were described by Zdravsky.

Wiener klinische Wochenschrift, Vienna

49 97 128 (Jan 24) 1936 Partial Index

- Pathogenesis of Chronic Articular Rheumatism E Freund—p 99
- *Crampus Neurosis and Gout (Aspects of Uratic Crampus Diathesis) A Vogl—p 103
- *Sulfur Therapy in Nurslings M Oppenheim and P Fantl—p 107
- Analogies Between Certain Manifestations of Senility and Cushing's Disease W Raab—p 112
- Clinical Aspects of Hypertrophy of Prostate R Paschalis—p 113

Crampus Neurosis and Gout—Vogl directs attention to a type of muscular cramps designated by Wernicke, who first described it as crampus neurosis. The author considers this term not quite suitable and shows that the earlier investigations on this disorder did not clarify its etiology. Studies in recent years, however, particularly those conducted by Wilder, disclosed a hyperuricemia in patients with this type of muscular cramps. Further investigations by Wilder and studies conducted by the author himself revealed that a metabolic disturbance of the type of gouty diathesis predisposes to painful muscular cramps and that these cramps have no connection with a neurosis. The author stresses that the appearance of muscular cramps is a frequent and even a typical occurrence in true gout. The appearance of the cramps often precedes the development of true gout by many years. Thus, if in case of a doubtful diagnosis the anamnesis reveals muscular cramps the disorder is probably gout. The author suggests that Wernicke's term "uratic crampus diathesis" and the disorder should be classified with the group of disturbances of the uric acid metabolism. For the treatment of uratic crampus diathesis he recommends the same dietetic and medicinal measures that are employed in gout. Injections of calcium are also helpful.

Sulfur Therapy in Nurslings—According to Oppenheim and Fantl, recent reports indicate that the use of sulfur pastes in nurslings with scabies has resulted in severe disorders and even in death. They concede however, that nearly all remedies used in the treatment of scabies (Peru balsam, tar, betanaphthol and so on) are likely to produce toxic effects in nurslings and that sulfur is generally considered the least toxic of the parasiticides. The authors state that an ointment which contains sulfur has been used by them regularly in nurslings with skin disorders and particularly in those with scabies. However, because of the practical importance of the toxicity of sulfur they decided to conduct animal experiments. On the basis of these tests they reach the conclusion that the animal organism tolerates considerable amounts of sulfur and they do not agree with Basch, who had decided that scabies in nurslings should not be treated with sulfur preparations but with other substances. They concede that sulfur therapy may result in undesirable complications, but they point out that there is probably no substance which does not eventually do that. They think that, even though sulfur may not be an ideal substance for the treatment of scabies in nurslings, it nevertheless has its advantages and it causes serious complications only in rare instances. They know of no antiscabetic remedy that is entirely harmless.

Sovetskaya Khirurgiya, Moscow

Pp 1 400 (No 6) 1935 Partial Index

- *Perforation of Gastric Duodenal Ulcer One Thousand Cases S S Yudin—p 25
- Importance of X Rays in Diagnosis of Perforated Ulcers S V Ivanova Podobed—p 47
- Study of Etiology of Acute Perforations of Peptic Ulcer D A Arapov and V F Grosse—p 57
- Principal Stages in Development of Problem of Transfusion of Cadaver Blood M G Skudina—p 69
- Biochemical Changes of Cadaver Blood M G Skudina R E Ginzburg and A V Rusakov—p 78

Perforation of Gastric Duodenal Ulcer—Yudin states that the incidence of ulcer disease in women in his general material was 10 per cent and that the incidence of perforation in women was less than 2 per cent. Thus among 1014 cases of perforation eighteen were in women. Only two of these were users of tobacco. The curve of incidence increased regularly during the second half of the winter to reach its highest point by the end of the spring after which it exhibited a decline and reached its lowest point in August. The author speculates on the seasonal increase in perforations by supposing that the decreased use of vegetables and of fruit brings about a state of avitaminosis which renders the tissues less resistant.

to the ulcerative process. A considerable number of perforations took place after the big meal of the day, suggesting that overdistention of the stomach acts as a direct etiologic factor. While an adherent of Rosenow's theory of infection as the determining factor in the causation of ulceration as well as in the act of perforation, the author states that gastritis was frequently absent in his cases of perforation. The existence of grip or tonsillitis did not appear to be the determining etiologic factor. Besides the pathognomonic signs of perforation the author emphasizes that the pulse is either normal or slowed and that vomiting is unusual. The phrenicus symptom, or radiation of pain in the shoulder, is helpful and is suggestive of perforation of a duodenal ulcer if the radiation of pain is in the right arm or shoulder, and of a gastric ulcer if the radiation is in the left arm or shoulder. Free gas in the peritoneal cavity is pathognomonic and was demonstrated roentgenologically in 80 per cent. In the treatment of perforation, opinions differ as to whether to limit the operative intervention to the saving of the patient's life or to direct it to the cure of the disease at the same time. Necropsies in cases in which simple closure of the perforation was practiced not infrequently revealed fresh ulceration along the suture line. These ulcers in some of the cases led to fresh perforations. The author believes that the virulent infection present was responsible for the untoward result. Among the advantages of the more radical treatment the author states that gastric resection restores the motor and evacuating function of the stomach, removes the ulcer and the ulcer bearing area, removes the infected area, and results in a maximal lowering of acidity. Organic disease of the heart or of the vascular system, obesity, diabetes, active tuberculosis or nephritis contraindicates radical therapy. The general condition of the patient is a safer indication than the number of hours elapsed since the perforation. Age is the most important factor to consider. Resection is advisable in the early cases only in patients past 45 years. Resections should be performed by experienced surgeons with properly trained assistants. The author prefers spinal anesthesia. The abdomen is always closed without drainage. The mortality rate in a group of 673 partial gastric resections performed in the course of six years for perforation was 9.8 per cent. In operating the author prefers the first method of Billroth. His mortality rate in another series of 331 resections performed during 1933 and 1934 was 7.8 per cent. The mortality rate for 121 resections performed by him in 1935 was still further lowered to 6.6 per cent.

Hospitaltidende, Copenhagen

79 29 56 (Jan 14) 1936

Spinal Fracture. Two Hundred and Fifty Cases. C. C. Fleischer Hansen—p. 29

*Preventive Treatment Against Thrombosis and Phlebitis. S. C. Dalsgaard—p. 42

Syphilis and Syphilology. S. Iomholt—p. 47

Preventive Treatment Against Thrombosis and Phlebitis—To provide a means of effective exercise as early as possible after operation, Dalsgaard has devised an apparatus to be fastened to the foot of the bed, which applies the principle of the bicycle and consists of an axis and pedals, the latter with shoes attached to hold the patient's feet. He regards the active muscular work of the lower extremities in pedaling the "bed bicycle" and the pressure rhythmically exerted by the bottoms of the feet as most important in prophylaxis against thrombosis and phlebitis, since it increases the rapidity of the venous circulation and thus hinders chemical changes in the blood.

79 57 84 (Jan 21) 1936

*Origin, Symptoms and Treatment of Pulmonary Emphysema in New Light. H. Heckscher—p. 57

Gymnastic Exercise Applied in Treatment of Patients with Pulmonary Emphysema. Agnete Bertram—p. 74

Investigations on Serum Amylase in Chronic Alcoholics. Preliminary Report. H. Christiansen—p. 79

Origin, Symptoms and Treatment of Pulmonary Emphysema in New Light—Heckscher defines pulmonary emphysema as a disease in which the objective cardinal symptom is a stethoscopically demonstrable extension of the boundaries of both lungs when the patient is examined in the natural standing position, the thorax and lungs being in their habitual position. His 181 cases in which treatment was administered during the last four years represent forms from the mildest with purely functional disturbances to older chronic cases with

organic changes in lungs, bronchi and circulatory organs. Twelve cases are described. The condition is almost always due to functional disturbances. Treatment must be directed to the causative factor or factors, such as improper posture ("soldier position," scoliosis, kyphosis, kyphoscoliosis, lordotic phthisic habitus), adiposity, disorders of the mucous membranes of the respiratory passages, neuroses, heart disease and too heavy physical labor. In most cases the treatment must be combined with gymnastic exercises designed to correct the defects in the posture of the back and thorax and to establish abdominal respiration, leading to normal respiratory rate, reduction of the emphysema and disappearance of the subjective symptoms. Individualization is necessary in the exercises.

Svenska Lakaresällskapet Handlingar, Stockholm

61 197 244 1935

*Remote Effects of Removal of Normal Spleen in Man. Contribution to Pathophysiology of Human Spleen. E. Ask-Upmark—p. 197

Effects of Removal of Normal Spleen in Man—Among Ask-Upmark's 100 cases from Sweden in which the normal spleen had been removed (in ninety-nine cases owing to traumatic injury and in one case to movable spleen), from one to twenty-seven years earlier, and ninety-four cases from the literature, eleven deaths had occurred, five of them from pulmonary tuberculosis. No increased susceptibility to infections or to malignant tumors was seen in his material, but he emphasizes that only from 15 to 18 per cent had reached the cancer age on after-examination. A tendency to rapid exhaustion was not infrequently present. Various disorders in the digestive tract were noted in about 10 per cent, likewise disturbances in the nervous system and metabolic activities, and changes in body weight. In most cases the morbidity was the same as in the average person. The author thinks that persons whose normal spleen was removed a year earlier should be accepted for insurance on the usual terms, and, if not accepted, should be examined at least once yearly in the expectation of an eventual bodily adjustment to the splenectomy. Anatomically, physiologically and clinically his investigations indicate that the spleen, while not necessary to life, should be removed only on vital indication.

Ugeskrift for Læger, Copenhagen

97 1151 1172 (Nov 14) 1935

*Cystic Mastopathy and Its Treatment with Estrin. E. Dahl-Iversen—p. 1151

*Treatment of Crises in Addison's Disease. P. Schultzer—p. 1153

Cystic Mastopathy and Its Treatment with Estrogenic Substance—In younger patients Dahl-Iversen advises conservative treatment and considers surgical treatment only when conservative treatment is without effect and the patient's complaints or a suggestive change in the clinical picture indicates operation. Support of the affected breast without compression is recommended, together with oral administration of from 2,000 to 3,000 mouse units of estrogenic substance daily or intragluteal administration of from 10,000 to 20,000 mouse units weekly for at least half a year, then continued at intervals to control the symptoms. The author says that conservative treatment should also be tried in women past the middle forties, but here aggravation locally and generally may occur under treatment with estrogenic substance. In all patients and particularly in the older patients conservative treatment calls for close and continued observation. In the majority of cases with a clinically localized process partial extirpation is followed by freedom from symptoms for a long period of years. Continued observation is necessary. In cases with diffuse changes, ablation of the breast is the rational method, possibly with preservation of the skin areola and papilla. If the microscopic examination after partial or total excision shows malignant changes, a second radical operation is indicated.

Treatment of Crises in Addison's Disease—Schultzer finds that treatment with adrenal cortex extract alone or in combination with sodium chloride has an excellent effect in acute insufficiency of Addison's disease. The improvement in the general condition is reflected in the patient's appearance. Reduction in blood urea values affords a numerical expression of the improvement. No certain information is obtained from the blood chloride.

